RECENTLY RECOGNIZED SPECIES OF CRATAEGUS IN EASTERN CANADA AND NEW ENGLAND,—VI.

C. S. SARGENT.

TOMENTOSAE.

Stamens 20; anthers rose-color or pink.

Crataegus Helenae, n. sp. Leaves broadly ovate to oval, acute or short-pointed and acuminate at the apex, concave-cuneate or rounded at the entire base, finely and often doubly serrate above, with straight glandular teeth, and slightly divided above the middle into 3 or 4 pairs of short acuminate lobes, when they unfold tinged with red, glabrous with the exception of a few hairs along the upper side of the midribs and conspicuously reticulate-venulose, with midribs and veins deeply impressed on their upper side, when the flowers open late in May or at the beginning of June, thin but firm in texture, dark green, smooth and lustrous above and pale or glaucous below, and at maturity coriaceous, dark green on the upper and pale on the lower surface, 5–6 cm. long, 4–5 cm. wide, with stout yellow midribs often rose-colored on the lower side toward the base, and slender yellow primary veins extending obliquely to the points of the lobes; petioles stout, wing-margined at the apex, usually rose-colored in the autumn, 1.2–1.5 cm. in length; stipules linear, acuminate, bright red, mostly deciduous before the flowers open; leaves on vigorous shoots broadly oval to rhombic, short-pointed at the apex, rounded or cuneate at the base, coarsely serrate, often 6 cm. long and 5 cm. wide, with short stout broadly winged dark red petioles. Flowers about 1.5–1.7 cm. in diameter, on elongated slender glabrous pedicels, in usually 12–18-flowered compact corymbs, with oblong-obovate to linear bracts and bractlets glandular, with minute dark red glands, bright scarlet like the large and conspicuous inner bud-scales and mostly deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, dark red in the bud, the lobes slender, acuminate, glandular, with minute stipitate glands, glabrous on the outer and puberulous on the inner surface, reflexed after anthesis; stamens 20, long-exserted; anthers large, dark rose color; styles 2 or 3, mostly 2. Fruit ripening early in September and falling during the month, on slender erect reddish pedicels, in few-fruited clusters, short-oblong, often ovate, full and rounded at the ends, scarlet, very lustrous, translucent, 8–10 mm. long and nearly as broad; calyx little enlarged, with a narrow shallow cavity, and spreading and reflexed lobes villose-pubescent on the upper side and mostly persistent on the ripe fruit; flesh thin, orange color and succulent; nutlets usually 2, broad

and rounded at the base, narrowed and rounded at the apex, ridged on the back, with a low slightly grooved ridge irregularly penetrated on their inner faces by usually large deep cavities, 6–7 mm. long and about 5 mm. wide.

A tree 3–4 m. high, with a tall stem 5–8 m. in diameter covered with dark scaly bark, short thick erect rigid branches forming an open irregular head, and stout slightly zigzag branchlets marked by small oblong pale lenticels, dark orange-green and glabrous when they first appear, becoming light red or purplish and very lustrous in their first season and ultimately dull gray-brown, and armed with stout usually straight purplish shining spines generally pointed toward the base of the branch and 5–6 cm. long.

Rocky hillsides, Wolf Pen Farm, Southborough, Worcester County; Massachusetts, *C. S. Sargent*, May, September and October, 1904.

This handsome plant, which is one of the most distinct of the species of this group and one of the most beautiful of the New England Thorns, is named for Miss Helen Sears of Southborough.

Crataegus pisifera, n. sp. Leaves rhombic to oblong-obovate on vigorous shoots, acute or acuminate, gradually narrowed to the cuneate entire base, finely doubly serrate, above with straight glandular teeth and slightly divided above the middle into numerous short acute lobes, nearly fully grown when the flowers open during the last week of May and then thin, yellow-green, lustrous, smooth and glabrous above with the exception of a slight pubescence along the midribs, and pale and clothed below along the base of the primary veins with short persistent hairs, and at maturity coriaceous, conspicuously reticulate-venulose, dark yellow-green and lustrous on the upper and pale on the lower surface, 5–7 cm. long and 4–5 cm. wide, with stout yellow midribs deeply impressed on the upper side and 5 or 6 pairs of slender primary veins extending obliquely to the points of the lobes; petioles stout, wing-margined to the middle, puberulous on the upper side while young, becoming glabrous, sometimes slightly tinged with rose color, 1–1.5 cm. in length. Flowers 1.3–1.5 cm. in diameter, on slender elongated slightly villose pedicels, in wide compound many-flowered corymbs, with oblong-obovate to linear acute glandular bracts and bractlets fading brown and often persistent until the flowers open; calyx-tube narrowly obconic, the lobes wide, acuminate, incisely glandular-serrate, glabrous on the outer, pubescent on the inner surface, reflexed after anthesis; stamens 20; anthers minute, light pink; styles 2 or 3. Fruit ripening at the end of September and remaining on the branches until the following spring, on slender reddish erect or spreading pedicels, in many-fruited clusters, hard, subglobose, crimson, lustrous, marked by occasional pale dots, 6–8 mm. in diameter; calyx prominent, with a

deep narrow cavity and wide coarsely serrate lobes light red below the middle and pubescent on the upper side, persistent on the ripe fruit; flesh thin, dry and mealy; nutlets 2 or 3, full and rounded at the ends, rounded and ridged on the back, with a broad slightly grooved ridge, irregularly penetrated on the inner faces by broad shallow cavities, 5–6 cm. long and about 4 cm. wide.

A shrub 2–3 m. high, with stout slightly zigzag branchlets marked by large pale lenticels, light orange-yellow and glabrous when they first appear, becoming bright chestnut-brown and very lustrous during their first season and reddish brown the following year, and armed with stout slightly curved purplish shining spines 3.5–4.5 cm. long.

Cornwall, Vermont, *E. Brainerd* (No. 15 d type), May and September 1901, *W. W. Eggleston* (Nos. 2234 and 2323), May and July, 1901.

Well distinguished from the other species of this group by its minute pale pink anthers and small hard long-persistent fruit.

(*To be continued.*)

SYMPHORICARPOS RACEMOSUS AND ITS VARIETIES IN EASTERN AMERICA.

M. L. FERNALD.

THERE are in eastern America three noteworthy variations of the Snowberry, *Symphoricarpos racemosus*, all with the corolla characteristically bearded within and with the stamens and styles included, and seeming referable to one broadly distributed but variable species.

The plant commonly known as *Symphoricarpos racemosus* is an upright shrub with glabrous leaves and often numerous flowers in terminal or axillary spiciform racemes. This plant is very generally cultivated in Europe as well as in America; and as a native shrub it is found more or less across the continent from Quebec to Washington, and very locally south in the mountains to Virginia.

A second plant often smaller than the glabrous-leaved shrub, though sometimes quite as large, has the leaves pilose or tomentulose beneath, and usually few flowers. This shrub with pubescent leaves is locally abundant, especially on calcareous rocky banks, from east-

ern Quebec and Rupert Land throughout the forested region to Alaska, and south to western New England, northern Pennsylvania, Michigan, Montana, Idaho and California.

The third shrub has the small leaves pilose beneath, but, unlike those of the other two, decidedly whitened below, the leaves of the two preceding shrubs being merely pale green but not white beneath. This shrub with the leaves white beneath is known from Lake Superior to Lake Winnipeg, and from Alberta to Oregon and Colorado.

In the summer of 1904 the first-mentioned shrub, with glabrous leaves, was found in abundance on a wooded bank at Tadousac in eastern Quebec; while on the opposite bank of the River St. Lawrence, at Bic, the second shrub, with the green leaves pubescent beneath, was abundant. The flowers and other features showed no clear differences, but in the pubescent leaves the Bic shrub was strikingly unlike the smooth-leaved shrub of Tadousac. An attempt to identify the two shrubs has brought to light a singular confusion which has long prevailed in our interpretation of the plants which have passed as *Symphoricarpos racemosus*.

The species was described by Michaux from Lake Mistassini, but in his original description there is nothing to indicate whether or not the leaves are pubescent or glabrous. A pencil-note, however, "leaves very tomentulose beneath," which I made in 1903 while examining the herbarium of Michaux at the Muséum d'Histoire Naturelle in Paris, indicates that the Michaux type from Lake Mistassini was the pubescent leaved shrub which we know to be generally distributed in western Quebec and western New England, and which has usually passed as *Symphoricarpos racemosus*, var. *pauciflorus*.

The widespread application of the name *Symphoricarpos racemosus* to the glabrous-leaved shrub seems to be due to an erroneous identification of Loddiges in 1818. In the text accompanying the first illustration of this glabrous-leaved shrub (as *Symphoria racemosa*), Loddiges said: "This plant is quite new to this country [England]; we received it, for the first time, last spring, from our friend Mr. Robert Carr, who informs us that it is a native of the Western country of North America, and was found by Lewis and Clark beyond the rocky mountains, in August 1805: we consider it, however, to be the Symphoria racemosa of Michaux."[1] Loddiges' identification was accepted by Sims, in 1821, in the Botanical Magazine, where a col-

[1] Lodd., Bot. Cab. iii. no. 230 (1818).

ored illustration of the plant was presented;[1] and under the name *Symphoricarpos racemosus* the shrub soon became common in cultivation, and no one seems to have noticed that it was unlike the Canadian type preserved in the Michaux herbarium.

Robbins's *Symphoricarpos racemosus*, var. *pauciflorus*, as originally published in the fifth edition of Gray's Manual, in 1867, was distinguished by having reduced inflorescences and it came from "Rocky woods of L. Superior, *Dr. Robbins*, and northwestward. Alleghanies of Pennsylvania, *J. R. Lowrie*, *Mr. Bocking*." No mention, however, was made of the remarkable whitening of the under leaf-surfaces which is conspicuous in all Robbins's Lake Superior material and that from "northwestward" (*i. e.*, Lake Winnipeg Valley, *Bourgeau*). The leaves of the Pennsylvania material, from Blair and Huntington Counties, originally associated with the Lake Superior plant, are merely pale green but not white beneath and are like those of the pubescent-leaved plant of western New England and Quebec which is now identified with the Michaux type of *S. racemosus*.

The attempt to separate as a variety or a species the plants with reduced inflorescences is apparently artificial. At Bic, where the pubescent-leaved plant which has generally passed in the East as *Symphoricarpos racemosus*, var. *pauciflorus* (but which is really the true *S. racemosus*) abounds, shrubs on the same slope have the flowers solitary or in twos, or often several in an interrupted raceme. Again, the glabrous-leaved plant which has erroneously passed as true *S. racemosus* may often quite lack the elongate terminal raceme which is supposed to characterize it. Without characters other than those found in the presence or absence of pubescence on the leaves, the three plants occurring in eastern America are best treated as varieties of a broadly distributed species.

SYMPHORICARPOS RACEMOSUS, Michx. Shrub 0.2 to 1 m. high: leaves from elliptic-oblong to orbicular, *pilose beneath*.— Fl. Bor.-Am. i. 107 (1803). Var. *pauciflorus*, Robbins in Gray, Man. ed. 5, 203 (1867), as to Pennsylvania plant; and most authors of New England, New York, and Pennsylvania. *S. pauciflorus*, Britton, Mem. Torr. Cl. v. 305 (1894), in part.— Rupert Land to Alaska, south to Berkshire County, Massachusetts, Huntingdon and Blair Counties, Pennsylvania, Michigan, Montana, Idaho, and California.— Much of the

[1] Sims, Bot. Mag. xlviii. t. 2211 (1821).

northwestern material which is passing as *S. mollis*, Nutt., seems inseparable from *S. racemosa*.

Var. **laevigatus**. Often taller: *leaves glabrous beneath*. — *Symphoria racemosa*, Loddiges, Bot. Cab. iii. no. 230 (1818); Sims, Bot. Mag. xlviii. t. 2211 (1821). *Symphoricarpos racemosus*, most authors, not Michaux. — Saguenay County, Quebec to Washington, locally south in the mountains to Virginia. Freely cultivated and commonly escaped to roadsides, etc.

Var. PAUCIFLORUS, Robbins. Dwarf shrub: leaves more or less pubescent and *strongly whitened beneath*.— Robbins in Gray, Man. ed. 5, 203 (1867), as to Lake Superior and Winnipeg ("northwestward") plant. *S. pauciflorus*, Britton, Mem. Torr. Cl. v. 305 (1894), in part.— Lake Superior to Lake Winnipeg, and locally in the mountains from Alberta to Oregon and Colorado.

GRAY HERBARIUM.

THE ONTARIO NATURAL SCIENCE BULLETIN is the journal of the Wellington Field Naturalist's Club, the first number of which was issued at Guelph, Ontario, April 15th. The Bulletin is edited by A. B. Klugh, a guarantee that its future numbers will follow the first in containing many items of interest to the northeastern botanist.

LOTUS TENUIS AS A WAIF IN RHODE ISLAND.— On July 3, 1905, in a wet meadow near the railroad track as it enters Newport, Rhode Island, I found a small colony of *Lotus tenuis*, Waldst. & Kit. The meadow is quite on the outskirts of the town, with no gardens near at hand from which the plant could have escaped. The species is a native of Europe and was in full bloom. There were two patches, one growing in the meadow and the other by a cartroad, some twenty-five feet away. On July 25th I found a single plant of the same kind in the next meadow, across the road and to the northeast of the others, where possibly a seed had been carried by the prevailing southwest summer wind. By August 3rd no more flowers were to be found, but the plants were covered with pods. Specimens of this interesting plant have been deposited in the herbaria of Mr. Walter Deane, Mrs. George S. Parker, and the writer. It may be worth while to record also the finding of *Lycium vulgare*, Dunal, the Matri-

mony Vine, in Newtown, Rhode Island, growing along a wall in a dry pasture far from any apparent cultivation.— REGINALD HEBER HOWE, JR., Concord, Massachusetts.

PHYCOLOGICAL NOTES OF THE LATE ISAAC HOLDEN,— I.

Edited by F. S. COLLINS.

IN the notice of Mr. Isaac Holden, RHODORA, Vol. V, p. 219, mention was made of the careful record it was his custom to make of his collecting, with a view of publication as soon as a sufficiently complete list of the flora of the region near Bridgeport, Connecticut, could be made. At the time of his death nothing had been done towards publication, but now by the courtesy of Mr. Holden's family, his note books have been entrusted to the writer, who hopes to be able to make their contents available to the readers of RHODORA. Mr. Holden's numbered notes begin in 1890; the first 11 numbers referring to forms of the genus *Batrachospermum*, to which he was then giving special attention; each number covering specimens of a particular type or station, but of various dates; with No. 12 begins the system, afterwards followed, of using a number only for one date and for one form, but including an indefinite number of specimens of any one date and place, supposed to be identical. No. 12, the first under this plan, is *Cladophora Rudolphiana* Ag., May 18, 1890; the last is No. 1553, *Laminaria Agardhii* Kjellman, May 10, 1903, about six weeks before Mr. Holden's death. While absolute dependence can be placed in all of these records, no deduction should be drawn from the absence or the infrequence of record of any species; the record is one of specimens collected, not of plants observed; common forms, in regard to which no question was likely to occur, were passed by without record; for a fuller list of the marine algae of the Bridgeport region see Lists of New England Plants, V, Marine Algae, RHODORA, Vol. II, p. 41; the Connecticut column rests almost entirely on Mr. Holden's collections, and includes everything found by him up to the publication of the list; as regards fresh water algae, however, the present paper includes practically all Mr. Holden's observations.

For several years before 1890 Mr. Holden had collected marine algae, but his specimens were not numbered; some species, such as the delicate form of Rhodomela, *R. Rochei* Harvey, found abundantly then at Seaside Park, have not been seen, or are very rare, recently; the changes incident to the rapid growth of a city are felt by seaweeds as well as in other directions; some of the stations here given are no longer available; at Cook's Point, for instance, the original stations of *Stictyosiphon subsimplex* Holden, and *Hydrocoleum Holdenii* Tilden, have been destroyed by the building of great factories and the cutting of channels and ditches through the marshes; but marshes of similar character are abundant in the vicinity, and other stations will undoubtedly be found.

Mr. Holden distributed specimens freely to his correspondents, and in most cases these specimens bore the numbers from his note book; changes in names have been made in the past few years in some cases, and in the present list the latest accepted form is used. In the main it agrees with the list in RHODORA, Vol. II, p. 41, and where it differs, the name used in the latter is given as a synonym. Where the name on a numbered specimen is found to differ from the name under the same number in this list, the latter can be accepted as representing either a change required by later botanical developments, or a more mature determination by Mr. Holden. Few collectors were as careful as he to secure specimens at once in perfect condition for study, and representing at their best the form and color of the living plant; he never could refrain from collecting and mounting fine specimens of such genera as *Grinnellia*, *Dasya*, *Antithamnion*, which probably occur nowhere in the world in greater perfection and luxuriance than in Long Island Sound; the long series of numbers under each of these will show what favorites they were; but at the same time the most insignificant and unattractive appearing plants were collected and studied, time after time, until their identity was ascertained, and usually a set secured for distribution. Practically all of Mr. Holden's spare time for the thirteen years covered by this list was given to this work; but the great business enterprise of which he had charge took even more of his time than most men give to business. The dates in the note book might almost serve as a calendar of the Sundays and legal holidays for the thirteen years, with an occasional Saturday afternoon added. Mr. Holden was delightful in social relations; but an invitation to anything of a social nature

at an hour of daylight when he was free from business he would decline, with his regrets that he could not accept, as "the tide did not come just right for it that day," and he would start again for his favorite shore or stream.

In the present publication the record will not be in chronological order, but by species; the marine and fresh water forms from Connecticut localities being in separate lists. Under each species (or variety) will be given the numbers, the localities and the dates; and where specimens of the number in question were distributed in the Phycotheca Boreali-Americana, this will be indicated by the initials P. B.-A., with number. Notes made by Mr. Holden on special points of habit, structure, etc., will be given in quotation marks. After the Connecticut lists a short list will be given, representing collections made in Newfoundland, in July, 1897. Collections made during short visits to Mount Desert, Maine, Wood's Hole, Massachusetts, etc., have been already utilized in other publications. Published lists of algae are too often restricted to mere names; where a locality is given it is often only a town name; and any indication of time of occurrence is rather exceptional. The more recent European works give fuller details in these matters, as well as in regard to the environment favorable to a particular species; but in American publications little of this is to be found; a beginning, at least, can be made in this case. The month will always be given, but not the year; where there are notes as to fruit, the month for that will also be indicated, and the locality will be given with the utmost exactness possible. That so few exact localities are on record for algae seems strange, as there are no plants for which exact details are so desirable; a flowering plant in bloom is a conspicuous object, easily noted as one walks or even rides along; ferns are much the same, and even small Botrychiums can be found by getting down on one's knees; the larger fungi stand out plainly, the micro-fungi are associated with definite hosts; but with algae, especially with fresh water algae, the case is different. The stream in which they grow may be invisible to one walking a few rods away; in the pond there may be many species, sometimes mingled, sometimes in zones of depth, sometimes one at one point, another at another; often a species is persistent year after year in a very limited locality, and not elsewhere. The flowering plant or the fern is at once recognizable, or at most the question is between two or three critical species; but it is different with fresh

water algae. In the eastern states there are over 30 species of *Spirogyra*, over 50 species of *Oedogonium*; not one of these can be recognized at sight, or even by inspection with a pocket lens; it would be barely possible sometimes to distinguish the genus by the lens, and often not even this; if looking for a certain species of *Oedogonium*, recorded from a certain town, perhaps known only from that one station, one might spend days wandering about, collecting every green thing, examining each in the evening with the microscope, and finally go away without the desired plant. Details as to station that would be unnecessary with flowering plants, that would even seem grotesque to botanists generally, may be very useful. It might excite mirth to read that *Oedogonium Ravenellii* grew in South Springfield, in the pond in Smith's pasture, at the place where Jones's cattle come down to drink; and yet, without some such detail, one might spend a day in vain in looking for the rare species. Of course the cows may change their habits, as everything in this world changes; but cows and country residents generally are conservative, and changes in such matters are infrequent. As regards the larger marine algae, such full detail is not as necessary, but it is a help, and the smaller forms require it only in a less degree than the fresh water forms; nearly every species thrives best in some particular environment; shallow bay, swift current, exposed to surf, etc.; the knowledge of this is convenient to the collector. For the interest of the student who wishes to learn in regard to such preferences of environment, but who cannot visit the station, indications of the characters of the principal localities here referred to will perhaps be useful. Seaside Park, Pleasure Beach, Long Beach, and Woodmont, are sandy or pebbly shores open to Long Island Sound; often with boulders of various sizes, but at Woodmont is the only exposure of solid rock for many miles; several species not recorded elsewhere in the Sound are found here. The Gut is a narrow channel, through which the tide runs swiftly; Cook's Point is low and marshy, facing Bridgeport harbor; Stratford Shoals (or Middle Ground), Penfield Reef, and Black Rock, are points in the Sound, marked by light-houses or beacons, and nearly or quite covered at high tide. Fresh Pond is in Stratford, and is connected with the Sound by a narrow channel, which at times is open, at times closed by gates; the water varies from slightly brackish to fully as salt as the sea; but in spite of the name, is never fresh. Yellow Mill Pond is a shallow muddy bay, the bottom bare at low tide, the outlet crossed by Yellow Mill

Bridge, under which the tide runs in and out swiftly. The fresh water stations require no comment, as the name usually gives sufficient indication.

CONNECTICUT MARINE ALGAE.

Polycystis elabens (Kütz.) Farlow. 870, with *Anabaena variabilis*, on decaying algae, Fresh Pond. Aug.

Gloeocapsa crepidinum Thuret. 152, 596, 939. Stratford Shoals, on stonework; on wharf logs. May, Sept.

Entophysalis granulosa Kütz. 707, 749, 1132 = P. B.–A. 152b. On stones in Fresh Pond. Aug.–Oct.

Pleurocapsa fuliginosa Hauck. 766, 770, 773, 778, 897, 898, 904 = P. B.–A. 101, 905, 906, 907, 908, 939, 968. On *Enteromorpha* and stones between tides, below Yellow Mill Bridge. Nov., Dec., May, Aug.

Xenococcus Schousboei Thuret. 607, 622, 667, 768. On *Chantransia virgatula*, *Sphacelaria radicans*, *Rhodochorton Rothii*; Seaside Park; Black Rock; Fresh Pond. June, July, Dec.

Hyella caespitosa Born. & Flah. 861, 1513. In shells. June, Aug.

Spirulina subsalsa Oersted. 334, 626, 1133, 1320 = P. B.–A. 252. On algae and *Ruppia*, Fresh Pond. May, July, Aug. July 7, "In large expanded masses on stalks of *Ruppia*. Could take it up in jelly-like masses half an inch thick, pure *Spirulina*."

Oscillatoria chalybea Mert. 890, 940, 941, 948. Outlet of Fresh Pond; on woodwork, rocks, and *Enteromorpha*, below Yellow Mill Bridge. May, June, Nov.

O. Corallinae (Kütz.) Gomont. 711, 1039. On *Gelidium*, Woodmont; on *Enteromorpha* below Yellow Mill Bridge. Sept.

O. formosa Bory. 1503 = P. B.–A. 710. Floating on stagnant marsh pools, near Fresh Pond. May.

O. laetevirens Crouan. 1471. Forming a film on old grassy bottom, brackish marsh pool, Cook's Point. June.

Lyngbya aestuarii (Mert.) Liebm. 60, 168, 341, 344, 440, 1466. Cook's Point, Fresh Pond. June, July, Sept. Oct.

L. confervoides Ag. 152, 486, 1040, 1529. Stratford Shoals, on stone and iron work. July, Sept., Oct.

(*To be continued.*)

Vol. 7, no. 80, including pages 141 to 156, was issued 5 August, 1905.

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 7 October, 1905 No. 82

ECLIPTA ALBA IN MASSACHUSETTS.

S. N. F. Sanford.

The appearance of any plant in a new locality is always interesting, whether the extension of its range has been gradual, or is the result of accident, the plant becoming established in the latter case by quick adaptation to its new surroundings.

The discovery of *Eclipta alba* Hassk. at Fall River, Massachusetts, Sept. 5, 1905, led to the usual inquiry regarding the present knowledge of the plant in the North, for the manuals give the range as Southern New York, New Jersey, and Southward to Florida. A specimen collected on the South Boston flats by C. E. Perkins, in 1879, is in the herbarium of the New England Botanical Club, and this appears to be the basis of the only other New England record. The South Boston station is now probably destroyed.

The Fall River specimens are not mere waifs struggling to exist, for the writer counted some fifty vigorous, nearly full-sized plants growing on both sides of a stream, some of them bearing five or more stout branches, each with one to several flowers. The limited area in which the plants were found, however, points to a very local origin, and the proximity to the terminus of a railroad over which is transported much cotton from the South, indicates at once their probable source.

Aside from the discovery of *Eclipta alba* so far out of its natural range, an interesting study of habitat is involved. The land is low, wet, waste ground through which runs a small stream of fresh water. Into this stream is a more or less constant flow of hot water from a neighboring cotton mill, resulting in a warm, moist atmosphere all

about the area. This combination has produced an ideal habitat for *Eclipta*, the conditions being not unlike those which prevail in its Southern home. Add to this the fact that the plant is a composite with the usual vitality of that group, and there is no reason why the plants should not continue to thrive and spread.

Fall River, Massachusetts.

RECENTLY RECOGNIZED SPECIES OF CRATAEGUS IN EASTERN CANADA AND NEW ENGLAND, — VI.

C. S. Sargent.

(*Continued from page 164.*)

Stamens 10 or less.

Mature leaves thin.

Anthers pink.

Crataegus rhombifolia, Sargent, Rhodora, v. 193. (1903.)

This species, described from specimens gathered by Dr. C. B. Graves near Norwich, Connecticut, appears to be widely distributed through western New England and to cross the Hudson River into eastern New York. Massachusetts, Great Barrington, *Brainerd* and *Sargent*; Vermont, Ferrisburg, *Brainerd*; Twin Mountain, Rutland, *Eggleston* (nos. 2229 and 2343), and Gardener's Island (nos. 2320 and 2343), Charlotte, *Horsford* in 1879: New York, *Peck*, North Greenbush (no. 69), Whitehall (no. 61), Crown Point, *Eggleston* (nos. 2236 and 2264), *Brainerd* and *Sargent* in 1900.

Crataegus Peckietta, n. sp. Leaves oblong-obovate to oval or broad-rhombic, short-pointed and acuminate at the apex, gradually narrowed and concave-cuneate at the entire base, sharply doubly serrate above, with straight glandular teeth and usually slightly and irregularly divided above the middle into small acute lobes, nearly fully grown when the flowers open during the first week of June and then thin, yellow-green, lustrous and scabrate above, with short white hairs and pale and glabrous below with the exception of a few short hairs along the base of the veins, and at maturity thin but firm in texture, glabrous, yellow-green, smooth and lustrous on the upper and pale on the lower surface, 5–6 cm. long and 3–4 cm. wide, with

thick yellow midribs and 5 or 6 pairs of slender primary veins extending obliquely to the points of the lobes; petioles stout, narrowly wing-margined to the middle, puberulous while young, deeply grooved on the upper side, 1–2 cm. long; leaves on vigorous shoots oblong-obovate, more coarsely serrate, slightly lobed, often 8–9 cm. long and 5–6 cm. wide, with stout petioles about 3 cm. in length. Flowers 1.2–1.4 cm. in diameter, on long slender glabrous pedicels, in loose lax 15–20-flowered compound corymbs; calyx-tube narrowly obconic, glabrous, the lobes wide, acuminate, glandular-serrate, villose on the outer and covered on the inner surface with matted pale hairs, reflexed after anthesis; stamens 9–11, usually 10; anthers pale pink; styles 1–3. Fruit ripening from the first to the middle of September and remaining on the branches until after the leaves have fallen, on long drooping pedicels, in many-fruited clusters, ovate, rounded at the apex, nearly truncate at the base, red or greenish red, 9–10 mm. long and wide; calyx little enlarged, with a deep narrow cavity, and closely appressed lobes red below the middle and villose on the upper side, and often deciduous from the ripe fruit; flesh thin, dry and yellow; nutlets 2 or 3, full and rounded at the base, gradually narrowed and rounded at the apex, rounded and ridged on the back, with a low broad ridge, penetrated on the inner faces by long narrow cavities, about 6 mm. long and 4 mm. wide.

A shrub 2–5 m. high, with numerous stems 5–7 cm. in diameter near the ground and covered with gray-brown bark, the lower branches horizontally spreading, the upper ascending, and slender slightly zigzag branchlets marked by occasional oblong pale lenticels, dark orange-green and glabrous when they first appear, becoming bright chestnut-brown and very lustrous in their first season and dull gray-brown the following year, and armed with slender slightly curved red-brown shining spines 6–8 cm. long.

Rocky ridges; central, eastern and southern Adirondack region, New York, *Charles H. Peck*, Piseco, (no. 63 type), June, August and September, 1904, also Lake Pleasant, Hamilton County, Keene, Essex County, June, 1905, and Horicon, Warren County.

Crataegus Bristolensis, n. sp. Leaves ovate to rhombic, acute or acuminate, gradually narrowed and concave-cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and divided into 4 or 5 pairs of small acuminate lateral lobes, nearly half grown when the flowers open about the middle of May and then membranaceous, light yellow-green and roughened above by short rigid white hairs and glaucous below, and at maturity thin but firm in texture, smooth, yellow-green and lustrous on the upper and paler on the lower surface, 7–8 cm. long, 5–6 cm. wide, with stout midribs and slender primary veins arching obliquely to the points of the lobes;

petioles slender, slightly wing-margined at the apex, grooved on the upper side, glabrous, often dark rose color late in the season, 3–4 cm. in length. Flowers about 1.5 cm. in diameter, on slender elongated glabrous pedicels, in wide lax usually 8–10-flowered corymbs, with linear glandular bracts and bractlets fading rose color and mostly deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, the lobes slender, entire or occasionally glandular-dentate near the middle, tinged with red toward the acuminate apex, glabrous on the outer and puberulous on the inner surface, reflexed after anthesis; stamens 10; anthers pale pink; styles 2 or 3. Fruit ripening the end of September, on slender red pedicels, in few-fruited drooping clusters, oval, bright scarlet, covered with a slight bloom, marked by small pale dots, 1.2–1.4 cm. long; calyx little enlarged, with a narrow deep cavity, and closely appressed lobes pubescent on the upper side, their tips often deciduous from the ripe fruit; flesh thin, greenish yellow; nutlets 2 or 3, full and rounded at the ends, or when 3 narrowed and acute at the apex, ridged on the back, with a broad low deeply grooved ridge, penetrated on the inner faces by broad shallow irregular cavities, about 6 mm. long and 4 mm. wide.

A broad shrub, with stout nearly straight branchlets marked by small oblong pale lenticels, dark orange-green and glabrous when they first appear, becoming bright chestnut-brown and lustrous during their first season, orange-brown and lustrous in their second year, and ultimately light gray tinged with red, and armed with numerous stout straight or slightly curved chestnut-brown shining spines 3–5 cm. long.

Somerset, Bristol County, Massachusetts, *J. G. Jack*, (no. 7 type), May and September 1903.

The relationship of this species is with *Crataegus fertilis*, Sarg., of the Penobscot Valley, Maine (see Rhodora, v. 182), but it differs from that species in its scabrate leaves, smaller at the flowering time, more slender petioles, glabrous pedicels and corymbs, narrow nearly entire and less hairy calyx-lobes, in its less lustrous fruit in fewer-fruited clusters, and in its shorter and more slender spines.

Crataegus baccata, n. sp. Leaves rhombic to oval or rarely obovate, short-pointed and acuminate at the apex, gradually narrowed and concave-cuneate at the entire base, finely often doubly serrate above, with straight glandular teeth, and slightly divided above the middle into 4 or 5 pairs of small acuminate lobes, more than half grown when the flowers open during the first week of May and then membranaceous, light yellow-green, roughened by short white hairs and pubescent or villose along the midribs above and pale and glabrous with the exception of a few axillary hairs below, and at maturity thin but firm in texture, smooth, lustrous, and yellow-

green on the upper and pale on the lower surface, 5–6 cm. long and 3–5 cm. wide, with stout midribs tinged with rose late in the season on the lower side toward the base, and slender yellow primary veins extending obliquely to the points of the lobes; petioles slender, wing-margined at the apex, deeply grooved, sparingly villose while young, rose-colored in the autumn, 8–18 mm. in length. Flowers about 1.5 cm. in diameter, on slender villose pedicels, in wide lax many-flowered hairy corymbs, with linear-obovate to lanceolate glandular bracts and bractlets, fading brown and mostly deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, glandular, with bright red glands, glabrous on the outer and coated on the inner surface with shining white hairs, reflexed after anthesis; stamens 5–10; anthers pink; styles 2 or 3, usually 2. Fruit ripening early in September and soon falling, on slender pedicels, in few-fruited erect or spreading clusters, subglobose, orange-red, lustrous, marked by many small pale dots, 7–8 mm. in diameter; calyx little enlarged, with a narrow shallow cavity, and spreading lobes serrate above the middle, villose on the upper side and usually persistent on the ripe fruit; flesh thin, yellow, dry and mealy; nutlets generally 2, full and rounded at the ends, prominently ridged on the back, with a broad deeply grooved ridge, penetrated on their inner faces by deep narrow irregular cavities, about 6 mm. long and 5 mm. wide.

A shrub 2–3 m. high, with numerous erect spreading stems, and stout zigzag branchlets marked by occasional oblong pale lenticels, light orange-green and glabrous when they first appear, becoming light reddish brown and lustrous and ultimately dull gray-brown, and armed with many straight slender light red-brown shining spines 4–6 cm. in length.

Low rocky pastures, Worcester County, Massachusetts, South Lancaster, *E. F. Thayer*, September, 1903, May, 1904 (type); Fayville, *S. C. Sears*, May 1903.

Anthers pale yellow.

Crataegus Handyae, n. sp. Leaves broadly ovate to rhombic, acute or acuminate, rounded or concave-cuneate at the entire base, coarsely doubly serrate above, with straight glandular teeth, and divided above the middle into 4 or 5 pairs of broad acuminate lobes, more than half grown when the flowers open about the 20th of May and then membranaceous, yellow-green, very smooth and glabrous above, with the exception of a few hairs on the midribs, and glaucous and villose on the sides of the slender yellow midribs and veins below, with short white hairs persistent during the season, and at maturity thin but firm in texture, dark green, glabrous and lustrous on the upper and pale on the lower surface, 6–7 cm. long and 4–6 cm. wide; petioles slender, slightly wing margined at the apex, deeply grooved

on the upper side, glabrous, 3–4 cm. in length. Flowers 1.8–2 cm. in diameter, on slender elongated glabrous pedicels, in broad lax usually 6–10-flowered corymbs, with linear obovate to lanceolate minutely glandular bracts and bractlets, fading rose color and mostly deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from wide bases, acuminate, glandular-serrate usually only near the middle, glabrous on the outer, puberulous on the inner surface, reflexed after anthesis; stamens 10; anthers creamy white; styles 2 or 3, surrounded at the base by a ring of long white hairs. Fruit ripening at the end of September, on long slender drooping pedicels, in few-fruited clusters, subglobose, bright scarlet, lustrous, marked by occasional large pale dots, 1–1.2 cm. in diameter; calyx little enlarged, with a deep narrow cavity, and spreading reflexed or incurved lobes villose-pubescent above and dark red toward the base on the upper side; flesh thin, light yellow, slightly acid; nutlets 2 or 3, narrowed and rounded at the ends or when 3 acute at the apex, prominently ridged on the back, with a broad high deeply grooved ridge, penetrated on the inner faces by broad shallow irregular cavities, 7–8 mm. long, 4–5 mm. wide.

A shrub, with stout zigzag branchlets marked by numerous small oblong pale lenticels, light orange-green and glabrous when they first appear, bright chestnut-brown and very lustrous during their first season and ultimately dark gray-brown, and armed with slender slightly curved purplish spines 4–6 cm. long.

Somerset, Bristol County, Massachusetts, *J. G. Jack* (no. 8 type), May and September, 1903.

This distinct and handsome species is named for Miss Louise Holmes Handy of Fall River who first called my attention to the presence of several species of Crataegus in Fall River and Somerset.

Crataegus Stratfordensis, n. sp. Leaves oval to obovate, acuminate, gradually narrowed and concave-cuneate or, on vigorous shoots, rounded at the entire base, finely doubly serrate above, with straight glandular teeth and slightly divided above the middle into 4 or 5 pairs of short acuminate lobes, more than half grown when the flowers open during the first week of June and then thin, pale yellow-green and puberulous on the midribs above and pale and sparingly villose below along the midribs and veins, with short white persistent hairs, and at maturity thin but firm in texture, yellow-green and glabrous on the upper and paler yellow-green on the lower surface, 6–9 cm. long and 4.5–5 cm. wide, with slender light yellow midribs and 6–8 pairs of thin primary veins; petioles slender, wing-margined to the middle, deeply grooved on the upper side, 1–2 cm. long. Flowers about 1.5 in diameter, on slender elongated sparingly villose pedicels, in broad lax many-flowered corymbs, with linear obovate to lanceolate rose-colored bracts and bractlets mostly deciduous before the flowers

open; calyx-tube narrowly obconic, glabrous, the lobes wide, laciniately glandular-serrate, with bright red glands, glabrous on the outer, puberulous on the inner surface; stamens 7–10; anthers pale yellow or greenish white; styles 2 or 3, surrounded at the base by a narrow ring of pale hairs. Fruit ripening at the end of September, on long slender pedicels, in many-fruited drooping clusters, oval, greenish yellow mottled with crimson, lustrous, 8–10 mm. long and 7–8 mm. wide; calyx prominent, with a short tube, a broad deep cavity, and reflexed coarsely serrate lobes, their tips mostly deciduous from the ripe fruit; flesh thin and dry; nutlets 2 or 3, full and rounded at the base and gradually narrowed and rounded at the apex, rounded and only slightly ridged on the back, penetrated on the inner faces by large deep cavities, about 7 mm. long and 5 mm. wide.

A broad shrub 3–4 m. high, with numerous stems and stout nearly straight branchlets, dark orange-yellow and glabrous when they first appear, light chestnut-brown and lustrous during their first winter and dull brown tinged with red the following year, and armed with many stout straight or slightly curved purplish ultimately shining spines 4–6 cm. long.

Dry banks of pond holes near the coast of Long Island Sound, Stratford, Fairfield County, Connecticut, *E. H. Eames* (no. 137 type), May, June and September, 1901.

Crataegus pellucidula, n. sp. Leaves oval to obovate-oblong, acute, gradually narrowed to the concave-cuneate entire base, finely doubly serrate above, with straight or incurved glandular teeth, and slightly divided into short acute lateral lobes, more than half grown when the flowers open about the 1st of June and then membranaceous, light yellow-green, slightly roughened by short white hairs and villose along the midribs above and pale and glabrous below with the exception of a few short hairs along the primary veins and in their axes, and at maturity thin but firm in texture, glabrous, yellow-green, smooth and lustrous on the upper and pale on the lower surface, 6–7 cm. long and 4–5 cm. wide, with stout yellow midribs often tinged with rose color toward the base, and thin primary veins extending obliquely to the points of the lobes; petioles slender, wing-margined at the apex, deeply grooved and puberulous while young on the upper side, soon glabrous, 1–1.5 cm. in length. Flowers on stout elongated villose pedicels, in lax many-flowered compound villose corymbs, with linear obovate glandular bracts and bractlets, fading brown and mostly deciduous before the flowers open; calyx-tube broadly obconic, covered at the base with matted pale hairs, nearly glabrous above, the lobes wide, foliaceous, acuminate, laciniately glandular-serrate; stamens 10; anthers cream color; styles 2 or 3. Fruit ripening the end of September, on drooping slender reddish pedicels, in flat many-fruited clusters, subglobose, scarlet, very lus-

trous, translucent, marked by occasional large pale dots, 1.2–1.4 cm. in diameter; calyx enlarged, with a broad deep cavity, and large coarsely serrate erect or incurved lobes usually persistent on the ripe fruit; flesh thick, succulent, orange color; nutlets 2 or 3 rounded at the ends, rounded and ridged on the back, with a broad low slightly grooved ridge, irregularly penetrated on the inner faces by large deep cavities, dark-colored, about 7 cm. long and 4 cm. wide.

A tree 3–4 m. high, with a trunk 8–10 cm. in diameter, and stout nearly straight branchlets marked by large pale oblong lenticels, light yellow-green when they first appear, bright red-brown and lustrous during their first winter, and dull gray faintly tinged with red the following year, and armed with stout straight or slightly curved purplish lustrous ultimately gray-brown spines 4–5 cm. long.

Rocky pastures, Litchfield, Litchfield County, Connnecticut, *C. H. Bissell* (no. 72 type), September 1903, May 1904.

Well distinguished by the very broad laciniate calyx-lobes enlarged and erect on the beautiful dark lustrous fruit.

Crataegus spatiosa, n. sp. Leaves ovate, acute or acuminate, rounded or abruptly concave at the broad entire often unsymmetrical base, sharply doubly serrate above, with straight glandular teeth, and divided into 5 or 6 pairs of short broad acuminate lateral lobes, more than half grown when the flowers open during the last week of May and then thin, dark green, shining and slightly roughened above by short whitish hairs and paler and sparingly villose below along the midribs and veins, with short hairs mostly persistent throughout the season, and at maturity thin but firm to subcoriaceous, smooth, dark green and lustrous on the upper and pale yellow-green or whitish on the lower surface, 6–8 cm. long, 5.5–7 cm. wide; petioles stout, narrowly wing-margined at the apex, glabrous, glandular, with small stipitate red persistent glands, 2.5–3 cm. in length; stipules linear, glandular-serrate, fading rose color, caducous; leaves on vigorous shoots broadly ovate, gradually narrowed and concave-cuneate at the base, more coarsely serrate, often deeply divided into broad acuminate lobes, 7–8 cm. long and 6–7 cm. wide. Flowers cup-shaped, 2–2.3 cm. in diameter, on short slender glabrous pedicels, in compact usually 5–9-flowered corymbs, with linear-lanceolate bracts and bractlets, fading brown and generally deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, obscurely glandular mostly near the middle, reflexed after anthesis; stamens 10; anthers pale cream-color; styles 3, or rarely 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening early in October, on slender erect pedicels, in few-fruited clusters, oval to globose or rarely depressed globose, concave at the base, scarlet, lustrous, often blotched with yellow, marked by occa-

sional minute pale dots, 1.2–1.3, or rarely 1.4 cm. in diameter, and when oval once and a half as long as broad; calyx prominent, with a narrow deep cavity and appressed lobes often deciduous from the ripe fruit; flesh thin, light orange color, insipid; nutlets usually 3, rounded at the base, gradually narrowed and rounded at the apex, ridged on the back, with a broad deeply grooved ridge, penetrated on the inner faces by large shallow cavities, about 7 mm. long and 4 mm. wide.

A slender tree sometimes 7 m. high, with a trunk occasionally 10 cm. in diameter, covered with rough gray bark, small spreading and recurved branches, and slender slightly zigzag branchlets marked by oblong pale lenticels, light yellow-green and glabrous when they first appear, light reddish or orange-brown and lustrous during their first season and gray-brown the following year, and armed with slender nearly straight chestnut-brown shining ultimately ashy gray spines 4–6 cm. long; or often a tall shrub with numerous ascending stems.

Oak woods; shore of Fishers Island Sound, Mumford's Point, Groton, New London County, Connecticut, *C. B. Graves* (no. 60 a type), May, September and October 1903.

Crataegus Emersoniana, n. sp. Leaves broadly ovate to oval, short-pointed and acuminate at the apex, rounded or cuneate at the entire base, sharply doubly serrate above, with straight or incurved glandular teeth, and divided above the middle into 3 or 4 pairs of short acuminate spreading lobes, nearly half-grown when the flowers open about the 20th of May and then thin, light yellow-green, smooth and glabrous above with the exception of a few soft hairs near the base of the midribs and pale and sparingly villose below along the primary veins and in their axils, with short persistent hairs, and at maturity thin but firm, dark yellow and lustrous on the upper and paler on the lower surface, 5–6 cm. long and broad, with slender petioles wing-margined at the apex, slightly grooved, sparingly villose along the upper side while young, soon glabrous, occasionally glandular, with minute dark deciduous glands, rose-colored in the autumn, 2–2.5 cm. in length; leaves on vigorous shoots usually rounded at the base, more deeply lobed, 8–10 cm. long and broad, with stout broadly winged petioles glandular through the season. Flowers about 2 cm. in diameter, on long slender glabrous pedicels, in 7–15-flowered compound corymbs; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate and red at the apex, slightly dentate above the middle, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 10; anthers pale yellow; styles 3–5, surrounded at the base by a narrow ring of scattered white hairs. Fruit ripening at the end of September, on slen-

der drooping red pedicels, in few-fruited clusters, subglobose to globose, scarlet, lustrous, marked by numerous small pale dots, 1.2–1.4 cm. in diameter; calyx little enlarged, with a broad shallow cavity, and reflexed and closely appressed slightly serrate lobes dark red below the middle and puberulous on the upper side, their tips often deciduous from the ripe fruit; flesh thick, dry and mealy; nutlets 3 or 4, rounded at the base, gradually narrowed and rounded at the apex, ridged on the back, with a broad high deeply grooved ridge, penetrated on the inner faces by long and narrow shallow cavities, about 7 mm. long and 4–5 mm. wide.

A shrub 1–2 m. high, with stout zigzag branchlets marked by numerous oblong pale lenticels, orange-yellow and glabrous when they first appear, becoming light chestnut-brown and lustrous in their first winter and dull gray-brown the following year, and armed with numerous slender slightly curved purplish shining spines 5–6 cm. long.

Somerset, Bristol County, Massachusetts, *J. G. Jack* (no. 4 type), May and September 1904.

This species, and *C. spatiosa*, resemble the Coccineae in the character of the leaves and in the general appearance of the fruit, but the cavities on the ventral surfaces of the nutlets, although less developed than in most species of Tomentosae, indicate that they should be referred to that group. It is named in memory of George Barrel Emerson (1797–1881), the author of the classical *Report on the Trees and Shrubs of Massachusetts*, whose love of trees and their cultivation led to the establishment of the Arnold Arboretum.

Mature leaves subcoriaceous to coriaceous.

Anthers rose-color.

Crataegus fulgens, n. sp. Leaves broadly ovate to suborbicular, rounded or acute at the apex, abruptly narrowed and concave-cuneate at the entire base, coarsely doubly serrate above, with straight glandular teeth and slightly divided above the middle into 4 or 5 pairs of small acute lobes, scabrate above while young, with short white hairs, and pale and glabrous below with the exception of occasional axillary persistent hairs, and at maturity coriaceous, dark yellow-green, smooth and lustrous on the upper and pale on the lower surface, 5–7 cm. long and 4–7 cm. wide, with midribs deeply impressed on the upper side of the leaves and rose-colored on the lower toward the base, and prominent yellow primary veins extending obliquely to the points of the lobes; petioles stout, wing-margined at the apex, deeply grooved, dark rose color late in the season, 2–2.5

cm. in length. Flowers opening the first of June, on slender elongated glabrous or sparingly villose pedicels, in usually 10–12-flowered glabrous corymbs, with linear glandular bracts and bractlets fading brown; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, laciniately glandular-serrate, glabrous on the outer, puperulous on the inner surface; stamens 5–10; anthers rose color; styles 2 or 3. Fruit ripening the middle of September, on slender red pedicels, in generally 8–10-fruited drooping clusters, subglobose but rather broader than long, crimson, lustrous, marked by numerous small pale dots, 1–1.2 cm. in diameter; calyx little enlarged, with a wide shallow cavity, and spreading closely appressed laciniate lobes villose-pubescent on the upper side and often deciduous from the ripe fruit; flesh thin, orange color, soft and succulent; nutlets 2 or 3, full and rounded at the ends, rounded and usually only slightly ridged on the back, penetrated on the inner faces by short broad cavities, about 7 cm. long and 5 cm. wide.

A broad shrub 3–4 m. high, with stout spreading stems and thick nearly straight branchlets marked by numerous small pale lenticels, light orange-green and glabrous when they first appear, bright chestnut-brown and very lustrous during their first winter and ultimately dark dull gray-brown, and armed with stout nearly straight purplish spines 4–6 cm. in length.

Banks of small ravines, near the coast; Stratford, Fairfield County, Connecticut, *E. H. Eames* (no. 5 type) May 1898, September 1903.

Anthers pale yellow.

Crataegus Searsi, n. sp. Leaves obovate to ovate, acute or acuminate gradually narrowed and cuneate at the entire base, sharply often doubly serrate above, with straight glandular teeth, and divided above the middle into 4 or 5 pairs of short acuminate spreading lobes, deeply tinged with red and coated above with long soft white hairs when they unfold, and nearly half grown when the flowers open during the last week of May and then membranaceous, dark yellow-green, lustrous and roughened above by short rigid white hairs and pale and glabrous below, with the exception of a few hairs on the midribs and in the axils of the primary veins, and at maturity subcoriaceous, yellow-green, smooth and lustrous on the upper and pale yellow-green, and nearly glabrous on the lower surface, 5–6 cm. long and 4–5 cm. wide, with slender midribs often tinged with rose on the lower side toward the base and thin primary veins extending very obliquely to the points of the lobes; petioles slender, wing-margined at the apex, villose on the upper side while young, becoming glabrous 1–1.5 cm. in length; stipules linear, glandular-serrate, bright red, caducous; leaves on vigorous shoots broadly ovate to rhombic, sometimes

rounded at the gradually narrowed base, more coarsely serrate and more deeply lobed, and often 5–6 cm. long and 6–7 cm. wide, with stout rose-colored petioles broadly wing-margined below the middle and 1.2–1.5 cm. in length. Flowers about 1.5 cm. in diameter, on slender elongated villose pedicels, in wide lax many-flowered hairy corymbs, with linear acuminate glandular bracts and bractlets fading brown; calyx-tube narrowly obconic, hairy at the base, glabrous above, the lobes slender, acuminate, entire or slightly and irregularly glandular-serrate, glabrous on the outer, puberulous or villose on the inner surface, reflexed after anthesis; stamens 7–10; anthers pale yellow; styles 2 or 3, surrounded at the base by a narrow ring of pale hairs. Fruit ripening early in September and soon falling, on reddish villose pedicels, in many-fruited drooping clusters, subglobose or often a little longer than wide, crimson, lustrous, marked by occasional large pale dots, 8–10 mm. in diameter; calyx little enlarged, with a narrow shallow cavity and closely appressed lobes villose above and mostly persistent on the ripe fruit; flesh thin, yellow, sweet and succulent; nutlets 2 or 3, full and rounded at the ends, rounded and irregularly ridged on the back, with a low often grooved ridge, penetrated on the inner faces by small narrow cavities, about 6 mm. long and 4 mm. wide.

A shrub 2–3 m. high, with numerous thick ascending stems forming an open irregular head, and very stout slightly zigzag branchlets marked by few large oblong pale lenticels, light orange-green and villose-pubescent when they first appear, becoming nearly glabrous, bright chestnut-red and very lustrous before winter, and dull reddish brown the following season, and armed with numerous stout crimson bright chestnut-brown shining ultimately dull gray spines 4.5–6 cm. long.

Rocky hillsides; Wolf Pen Farm, Southborough, Worcester County, Massachusetts, *C. S. Sargent*, May and September 1904.

This species is named for the late J. Montgomery Sears, by whom it was first shown to me on his farm at Southborough where also grew within an area of a few acres *Crataegus conjuncta*, Sarg., *C. acutiloba*, Sarg., here unusually remote from the coast, *C. fucosa*, Sarg., *C. Thayeri*, Sarg., *C. flabellata*, Spach, the only reported Massachusetts' station for this northern species, *C. intricata*, Lang., and *C. Helenae*, Sarg.

CRATAEGUS FERENTARIA, Sargent, *Proc. Rochester Acad. Sci.* iv. 135. (1903.)

This species, first noticed in the neighborhood of Rochester, New York, now appears to be one of the most widely distributed New England species.

MAINE, Gerrish Island and York Harbor, *Jack*: NEW HAMPSHIRE, Holderness, *C. E. Faxon*: VERMONT, New Haven, *Eggleston* (no. 3331) and Middlebury (nos. 3332 and 3334), Waybridge, *Brainera* (no. 21), and New Haven (no. 23), Twin Mountain, Rutland, *Eggleston* (nos. 2230 and 2332), Lyndonville, *Eggleston* (no. 3398): MASSACHUSETTS, West Boylston, North Lancaster and Shirley, *E. F. Thayer*; Wareham, *Outram Bangs* (nos. 2, 3 and 4); Somerset *Jack*, (no. 1); Fall River, *L. H. Handy*; North Adams, *Sargent*: RHODE ISLAND, Tiverton, *Sargent*: CONNECTICUT, Franklin, *Graves* (no. 40): ONTARIO, near Toronto, *D. W. Beadle* (nos. 104, 105, 106).

In some of the Vermont specimens now referred to this species the anthers in the bud are faintly tinged with pink but are of the normal color soon after the flowers open.

ARNOLD ARBORETUM.

AN ANOMALOUS ALPINE WILLOW.

M. L. FERNALD.

GASPÉ Peninsula in Quebec is, in eastern America at least, the home of the genus *Salix*. There in an area of about 9000 square miles we know twenty-four indigenous species, and two varieties of such pronounced character as to seem perhaps worthy specific rank. Of these twenty-six indigenous willows fourteen are arctic-alpine shrubs of the Shickshock Mountains. Most of these shrubs, *Salix herbacea* L., *S. arctica* Pallas, *S. anglorum* Cham., *S. glauca* L., *S. desertorum* Richards., etc., are clearly referable to well known polar types; but one small ascending shrub occurring on alpine meadows of Mt. Albert and in crevices of serpentine along the headwaters of Ruisseau au Diable seems to be unique among arctic-alpine willows.

Superficially the shrub would be passed as the typical subglabrous *Salix desertorum* which grows along neighboring tributaries of Ruisseau au Diable, but that very beautiful shrub has densely white-pubescent capsules and yellowish chartaceous scales. The little shrub, which in habit, bark and foliage so closely simulates *S. desertorum*, has, instead, strictly glabrous capsules and glabrous green

herbaceous scales. In this scale-character the shrub somewhat approaches *S. retusa* of alpine Europe and its allies of the Himalayas; but unlike them it has the very definite style characteristic of *S. desertorum*, *S. glauca*, and their allies, all species with strongly pubescent capsules. If, as is apparently the case, this little willow is closely related to the superficially similar *S. desertorum* and its allies which abound on Mt. Albert, it would seem that the current tendency, to separate subgenerically species with glabrous from those with pubescent capsules, is at best artificial. Upon that question further study is needed, but since the Mt. Albert shrub with green herbaceous scales is clearly distinct from the described species to which it is apparently related it may be called

SALIX **chlorolepis**. Frutex ramosus 0.3–1 m. altus, ramis suberectis griseis 6–8 mm. crassis junioribus badiis lucidis; foliis lanceolatis vel elliptico-oblongis vel auguste obovatis apice et basi subaequaliter attenuatis obtusis vel rotundatis supra viridibus subtus glaucis utrinque primo arachnoideis demum glabratis integris 1–2.5 cm. longis 4–14 mm. latis breviter petiolatis; amentis breviter foliato-pedunculatis ovoideis vel cylindricis 5–13 mm. longis; squamis oblongis vel obovatis subtruncatis vel retusis glabris viridibus subherbaceis 2–3 mm. longis; filamentis pallidis glabris 5 mm. longis, antheris 0.7 mm. longis; capsulis glabris conico-subulatis obtusis obsolete pedicellatis 4 mm. longis; stylis 1.5 mm longis valde fissis, stigmatibus bifidis laciniis elongatis divergentibus. — QUEBEC, alpine meadows and wet crevices of serpentine, altitude 800–1000 meters, headquarters of Ruisseau au Diable, Mt. Albert, August 12, 1905 (*Collins & Fernald*, no. 59).

GRAY HERBARIUM.

SCLEROLEPIS IN NEW HAMPSHIRE. — According to both Gray's and Britton's manuals, *Sclerolepis verticillata*, Cass., ranges from New Jersey southward. Therefore the occurrence of this species in Bradford, N. H., a town some thirty-five miles north of Massachusetts and sixty miles from the coast, is of certain interest. At the southern end of Bradford Pond there is a grove of tall pitch pines separated from the water by a white sandy beach. During the first week of August, this beach was largely occupied by the following plants, all

abundant and in flower,— *Rhexia Virginica*, L.; *Drosera intermedia*, Hayne; *Xyris Caroliniana*, Walt.; *Utricularia cornuta*, Michx.; and *Eriocaulon septangulare*, Withering. *Pogonia ophioglossoides*, Nutt., in fruit was also abundant and showed two late albino blossoms. Along the water's edge, but not immersed, numerous plants of *Sclerolepis verticillata* were found, with flowers almost mature. A comparison of the specimens collected in Bradford with those from southern localities reveals no important differences. The species as it occurs in its more southern habitat is somewhat variable in height, in width of leaf, and in the firmness of the stem, differences depending in part upon whether the individual plants are growing in, or near the water. The Bradford specimens correspond to the shorter form, growing on the sand, and having a firm stem and numerous short leaves. Specimens collected at Bradford have been deposited in the Gray Herbarium of Harvard University.— FREDERIC T. LEWIS, M. D., Cambridge, Massachusetts.

A WORK FOR TEACHERS OF BIOLOGY.— In "The Teaching of Biology"[1] Professor Lloyd and Dr. Bigelow have treated their theme with considerable fulness, great painstaking, and much advantage to teachers of biology. The aims and scope of the book may be seen from the following partial list of chapter subjects: the value of biology in education; nature study; the value of botany in secondary education; various types of botanical courses; principles to be emphasized; detailed discussion of the course; laboratory and materials; botanical literature; the value of zoology; animal nature study and human physiology in the elementary school; the subject matter and the outline of a course for the secondary school; the relation of zoology in secondary school and in college. The full bibliographies and references to pedagogical literature are especially valuable. As regards the class of teachers to whom the work will prove to be of most service, it may be said that the general suggestions and the specific directions to teachers in secondary schools are of most value. The ideals of the authors

[1] The Teaching of Biology in the Secondary School, by Francis E. Lloyd, A. M., and Maurice A. Bigelow, Ph. D., Professors in Teachers' College, Columbia University. New York. Longmans, Green, and Co., pp. 500. Price $1.50.

in respect to the equipment of teachers and the plane upon which instruction should be placed are high. In botany a "synthetic course" is advocated, wherein insistence is laid upon the correlation of morphology and physiology (with ecology), and a dynamic point of view is taken and carried out. As outlined in detail, with many practical helps, by Professor Lloyd, this course agrees well with the recommendations of the committee appointed by the Society for Plant Morphology and Physiology to formulate a uniform college entrance requirement in botany. Schoolmen may well read Dr. Bigelow's arguments in favor of a year's course in biology the botanical and zoological elements of which would be so adjusted that the important general principles of life might be taught to the exclusion of a mass of relatively uninstructive details. — R. G. L.

Vol. 7, no. 81, including pages 157 to 172, was issued 19 September, 1905.

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 7 November, 1905 No. 83

THE USE OF ACCENTUAL MARKS IN GRAY'S MANUAL.

Ezra Brainerd.

I CANNOT refrain from expressing my amazement at a portion of Mr. Pease's article in the September RHODORA. I concur in what he says regarding the proper syllable to receive the accent, and am ready to try to say HYPERĪ CUM and POLYGŎN′ ATUM. But on page 160, paragraph marked "2," he passes outside of the subject indicated by his title, to speak of "vowel quantities," and criticises in the Gray Manual the use of certain accentual marks that have stood unchallenged for nearly fifty years.

Surely in the instances cited, with the two exceptions of PÍCEA and SAPÍNDUS, accepted as genera only in the last edition,[1] these marks are correctly used in the Manual. The proposed changes are in direct violation of long established and well known rules for the English pronunciation of Latin, and would lead us into ridiculous pedantry.

Mr. Pease evidently confuses two very different things, *viz.*: (1) the *ancient* distinction of vowels as "long" or "short" — referring not so much to quality of sound as to *length of time in uttering* the sound; and (2) the *English* distinction of vowels as "long" or "short" — referring to change of *quality*, according, for the most part, as a vowel ends a syllable or is followed by a consonant in the same syllable. Mr. Pease's erudition has enabled him to point out

[1] Dr. Gray himself in the Garden Botany, 1870, pp. 70 & 312 gives these words the correct accentual marks. "*Aegopódum*" in Mr. Pease's list is plainly a misprint for *Aegopodium*.

in the accented syllable of seventy-one generic names the vowel quantity as used in ancient prosody; but this has no bearing whatever upon the English method of pronouncing any of the names in his long list. Dr. Gray (and Dr. Watson and Dr. Britton after him) used the grave accent ` to indicate, not Latin quantity, but that the vowel over which it stood was to have the so-called long English sound; and the acute accent ´ to indicate, not that the vowel was short in Latin prosody, but was to have the "short-vowel" sound when pronounced by the English method.

It is hard to believe that Mr. Pease would have us pronounce RHUS as though spelled RŪSE, or RÒSA as though spelled RŏS'SA, and THŸMUS as though spelled Thўm'mus, ÀCER as though ĂS'SER, CLÉMATIS as CLĒ-MATIS, LÍLIUM as LĪ-LIUM. He admits that the English method of pronouncing Latin is "so firmly established in this country for scientific names that nothing short of a revolution in pronunciation could supplant it." But such changes as those just cited are contrary to the first principles of the English method, and decidedly revolutionary; at the same time they are equally far from what is commonly supposed to have been the pronunciation of the ancient Romans.

We have an excellent statement of the rules for pronouncing Latin by the English method in Harkness' Latin Grammar; and the subject is well discussed in most pronouncing dictionaries of Greek and Roman proper names. A few hours' study of these rules would enable our botanists to pronounce names of plants uniformly and consistently. What we hear now is frequently, not the Roman method nor the "continental method," but a medley of these with the English method.

MIDDLEBURY COLLEGE, Middlebury, Vermont.

AN ALPINE ADIANTUM.

M. L. FERNALD.

To a botanist who is familiar with the Maidenhair Fern, *Adiantum pedatum*, of rich deciduous woods of New England and the Alleghenies, and who looks upon that species as the northernmost American representative of a large tropical and subtropical genus, it is a

great surprise to find on the Shickshock Mountains of the Gaspé Peninsula a beautiful Adiantum covering hundreds of acres of alpine tableland. There, on the naked tableland of Mt. Albert and along the ice-cold streams of the alpine district, is an Adiantum forming broad bands of blue-green wherever the water from the cold bogs or melting snow-fields trickles through crevices of the greenish-brown serpentine.

Ordinarily the plant is strongly caespitose, very many stiff glaucous stipes springing from the crowns of the firmly entangled rootstocks. These rigid stipes are rarely more than 2 decimeters high, often scarcely 1 dm., though exceptional clumps have stipes fully 2.5 dm. tall. The blue-green fronds are from 0.5 to 2 dm. across, and the pinnae usually strongly ascending, without the long graceful curve which in *A. pedatum* causes the tips of the primary branches nearly to meet. In exposed sunny situations the small firm pinnules are peculiarly twisted, but in sheltered ravines they are quite flat and normal.

The plant is evidently a close ally of our Alleghenian *Adiantum pedatum*, but careful comparison with this plant of the woodlands shows the Mt. Albert fern to have certain characters which are noteworthy. Besides its small stature, ascending scarcely recurved pinnae and very firm texture the Adiantum of the Shickshocks differs in having the lower marginal rib of the pinnules more prominent, while the finer veins of the pinnules are more obscure than in *A. pedatum*. The teeth at the tips of the pinnules of the Mt. Albert plant are acute and often very fine, while those of the Alleghenian *A. pedatum* are rounded. But the best character, perhaps, is in the indusium. In *A. pedatum* this is transversely linear, varying much in length (usually from 2 to 5 mm. long) but always of a linear or short-oblong outline (about 1 mm. broad). In the Mt. Albert plant the indusia are more lunate, rarely twice as long as broad.

Study of the material in the Gray Herbarium shows that the plant of Mt. Albert, though usually dwarfed, is the characteristic Adiantum of wet rocks and mountain-gulches from Idaho and California north to Alaska, where it has passed as *A. pedatum*, and that it reappears in northeastern Asia. It is unquestionably the fern listed without description by Presl as *Adiantum boreale* " (A. pedatum ex Unalaschka *Kaulf. et herb. Chamisso*)," [1] which was afterward taken up and

[1] Presl, Tent. Pterid. 158 (1836).

described by Ruprecht as *A. pedatum*, var. *aleuticum*.[1] Ruprecht's material was from Unalaschka and Kadiak Island, and specimens from that region are clearly identical with those from Mt. Albert. Occasional specimens from northwestern America and some from eastern Asia show very evident transitions to typical *A. pedatum*, and, although he failed in his diagnosis to point out some leading characteristics of the fern, it is probable that Ruprecht's treatment of the plant was best and that it should be known as *Adiantum pedatum* L., var. *aleuticum* Ruprecht.

GRAY HERBARIUM.

RECENTLY RECOGNIZED SPECIES OF CRATAEGUS IN EASTERN CANADA AND NEW ENGLAND, — VI.

C. S. SARGENT.

(*Continued from page 185.*)

PUNCTATAE.

Stamens 20; anthers pale rose.

Crataegus umbratilis, n. sp. Leaves obovate to rhombic or sub-orbicular, acute or short-pointed and acuminate at the apex, gradually narrowed and concave-cuneate at the long entire base, sharply doubly serrate above, with straight glandular teeth, and divided above the middle into 3 or 4 pairs of short broad acute lobes, about half-grown when the flowers open at the end of May and then membranaceous, glabrous with the exception of a few pale hairs along the upper side of the midribs and veins, light yellow-green, smooth and lustrous above and pale below, and at maturity thin, glabrous, dark yellow-green and lustrous on the upper and paler on the lower surface, 6–7 cm. long and 5–7 cm. wide, with thin orange-colored midribs, and slender inconspicuous primary veins extending obliquely to the points of the lobes; petioles slender, broadly wing-margined at the apex, deeply grooved, glabrous, glandular, with occasional scattered persistent glands, 2–3 cm. in length; leaves on vigorous shoots more

[1] Ruprecht, Distrib. Crypt. Vasc. in Imp. Ross. 49 (1845).

coarsely serrate and more deeply lobed and often 3–8 cm. long and broad. Flowers 2–5 cm. in diameter, on long stout glabrous pedicels, in generally 5–12-flowered broad lax corymbs, the lower branches from the axils of upper leaves; calyx broadly obconic, glabrous, tinged with red, the lobes gradually narrowed, short-acuminate, finely glandular-serrate above the middle, green, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 20; anthers large, pale rose color; styles 5. Fruit ripening in September, on stout erect pedicels, in few-fruited clusters, subglobose to short-oblong, bright apple-green (September 19th), about 1 cm. in diameter; calyx prominent, with a wide deep cavity and small spreading and reflexed lobes hairy on the upper side and mostly persistent; flesh thin, green, dry and mealy; nutlets 5, full and rounded at the base, acute at the apex, rounded or occasionally obscurely ridged on the back, dark-colored, about 7 mm. long and 5–6 mm. wide.

A tree about 5 m. high, with a short trunk 20–25 cm. in diameter, covered with pale gray scaly bark, large spreading and ascending branches forming a wide open irregular head, and slender nearly straight branchlets marked by oblong pale lenticels, glabrous and deeply tinged with red when they first appear, soon becoming light orange-brown, light gray tinged with red in their second year, and armed with numerous slender nearly straight bright chestnut-brown shining spines 3.5–4.5 cm. long, elongated, much-branched, and very abundant on the trunk and branches.

Borders of Alder thickets in low moist ground in the shade of larger trees, Goddard estate near Litchfield, Litchfield County, Connecticut, *C. H. Bissell* (no. 67, type!), September 20, 1903, May, 1904; *Bissell* and *Sargent*, September 3, 1905.

Pruinosae.

Stamens 20; anthers pink.

Crataegus fusca, n. sp. Leaves ovate, acuminate, rounded, cuneate or almost truncate at the broad entire base, sharply often doubly serrate above, with straight glandular teeth, and divided into 4–6 pairs of narrow acuminate spreading lobes, nearly one-third grown when the flowers open about the 1st of June and then thin, yellow-green slightly tinged with red, and glabrous with the exception of a few scattered pale caducous hairs above and pale and glabrous below, and at maturity thin, bluish green and lustrous on the upper and paler blue-green on the lower surface, 4.5–7 cm. long and 4–5.5 cm. wide, with slender yellow midribs, and thin primary veins

arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, occasionally sparingly glandular, 2–3.5 cm. in length; leaves on vigorous shoots rounded or sometimes cordate at the base, coarsely serrate and more deeply lobed, with stout wing-margined glandular rose-colored petioles. Flowers about 2 cm. in diameter, on short slender glabrous pedicels, in usually 4–7-flowered corymbs, with linear acuminate glandular rose-colored bracts and bractlets mostly deciduous before the flowers open; calyx-tube broadly obconic, the lobes short, gradually narrowed, acuminate, minutely glandular on the margins, glabrous, reflexed after anthesis; stamens 20; anthers pale pink; styles 4 or 5. Fruit ripening the middle of October, on short stout erect pedicels, in few-fruited clusters, short-oblong, full and rounded at the apex, slightly narrowed at the base, dull brown, pruinose, 1–1.2 cm. in diameter; calyx prominent, with a short tube, a broad deep cavity and spreading and reflexed lobes dark red on the upper side below the middle; flesh thin, yellow-green, dry and mealy; nutlets usually 4 or 5, broad and rounded at the base, gradually narrowed and rounded at the apex, ridged on the back, with a high narrow ridge, light-colored, 7–8 mm. long and 4–5 mm. wide.

A tree with a short trunk and spreading branches forming a round-topped head, and slender nearly straight branchlets marked by oblong pale lenticels, orange-green more or less tinged with red when they first appear, bright chestnut-brown and lustrous during their first year and light gray tinged with red the following season, and armed with slender slightly curved purplish shining spines 4–5 cm. long.

Pastures near Burlington, Vermont, *W. W. Eggleston* (nos. 2282, 2346, 2874 type!), September and October 1901, May and June 1902, June 1903.

Anthers rose-color.

Stamens 15–20.

Crataegus Quinebaugensis, n. sp. Leaves rhombic, acuminate, cuneate and entire at the base, finely often doubly serrate above, with slender glandular teeth, and divided above the middle into 2 or 3 pairs of broad short acuminate lobes, nearly one-third grown when the flowers open about the 20th of May and then thin and glabrous, light yellow-green and very smooth above and pale bluish green below, and at maturity subcoriaceous, dark blue-green and lustrous on the upper and pale blue-green on the lower surface, 6–7 cm. long and 5–6 cm. wide, with slender yellow midribs, and thin primary veins extending obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, nearly terete, glandular, with minute dark red stipitate deciduous glands, 2–3 cm. in length; stip-

ules linear-obovate, glandular, fading rose color or brown, mostly fallen before the flowers open; leaves on vigorous shoots more coarsely serrate and more deeply lobed, often 8–10 cm. long and 7–8 cm. wide, with stout petioles conspicuously glandular through the season, and foliaceous lunate coarsely serrate persistent stipules. Flowers 1.6–1.9 cm. in diameter, on elongated slender glabrous pedicels, in usually 5–7-flowered corymbs, with linear-obovate acuminate glandular bracts and bractlets usually persistent until after the flowers open; calyx-tube broadly obconic, glabrous, the lobes wide, short-acuminate, usually dentate above the middle, with minute glandular teeth, reflexed after anthesis; stamens 15–20, usually 16–18; anthers pale rose color; styles 3–5. Fruit ripening in October and falling before the end of the month, on slender pendulous pedicels, in few-fruited clusters, oblong to slightly obovate, usually pointed and more or less angled at the base, gradually narrowed at the apex, light red or purplish, pruinose, 1–1.2 cm. long and 8–9 mm. wide; calyx little enlarged, with a short tube, a deep narrow cavity, and spreading and reflexed usually persistent lobes; flesh thin, hard and dry, greenish or yellowish white, sometimes tinged with red; nutlets 3 or 4, narrowed at the ends, acute at the apex, ridged on the back, with a low broad slightly grooved ridge, about 8 mm. long and 4–5 mm. wide.

A sparingly branched shrub 2–4 m. high, with long spreading and ascending stems covered with pale gray bark darker and rougher near their base, and stout zigzag branchlets marked by small oblong dark lenticels, orange-brown and glabrous when they first appear, dull olive or olive-brown during their first year, becoming gray-brown the following season, and armed with many slender slightly curved purplish shining spines 5–7 cm. long.

Near Hopeville, New London County, Connecticut, in the valley of the Quinebaug River, *C. B. Graves* (no. 57 type!), May, July and October 1904.

Stamens 10 or less.

CRATAEGUS BELLULA, Sarg., *Trees and Shrubs*, i. 111, t. 56. (1903.) I have referred to this species, known previously only in the neighborhood of Grand Rapids, Michigan, a large nearly aborescent plant discovered in Somerset, Massachusetts, by Mr. J. G. Jack (no. 6), May and September 1903. If this reference is correct *Crataegus bellula* is interesting as another instance of the occurrence of a species of this genus in remote regions without intermediate stations, for the country between southern Massachusetts and central Michigan has been so carefully examined for Crataegus that it is hardly prob-

able that such a distinct and beautiful plant as *C. bellula* could if generally distributed have escaped notice.

Crataegus incisa, n. sp. Leaves ovate-oblong, acuminate, cuneate or rounded at the entire glandular base, sharply doubly serrate above, with straight or incurved glandular teeth, and deeply divided into numerous narrow acuminate spreading sometimes reflexed lateral lobes, more than half grown when the flowers open from the 20th to the end of May and then membranaceous, light yellow green, smooth and glabrous above, and pale or glaucous and slightly hairy along the midribs and veins below, and at maturity subcoriaceous, dark blue-green and lustrous on the upper and pale-green on the lower surface, 5–8 cm. long and 4–6 cm. wide, with prominent yellow midribs, and slender obscure primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, nearly terete, yellow, sometimes glandular while young, with minute dark red deciduous glands, 2–3 cm. in length; leaves on vigorous shoots ovate, truncate or rounded at the broad base, coarsely serrate, 3-lobed by deep narrow sinuses, the terminal lobe incisely lobed, coriaceous, 7–9 cm. long and wide, with stout winged conspicuously glandular petioles, and foliaceous lunate long-pointed laciniately divided stipules. Flowers 1.8–2 cm. in diameter, on slender elongated glabrous pedicels, in lax 4–6-flowered corymbs, with linear acuminate glandular bracts and bractlets, fading brown and mostly deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from wide bases, acute and glandular at the apex, entire or finely glandular-serrate near the middle, glabrous, reflexed after anthesis; stamens 5–10; anthers pale rose color; styles usually 3, surrounded at the base by a narrow ring of pale hairs. Fruit ripening late in October, and persistent until after the fall of the leaves on erect or spreading pedicels, in compact few-fruited clusters, obovate, full and rounded at the apex, gradually narrowed to the base, green covered with a glaucous bloom, late in the season often becoming crimson or tinged with crimson, 1.3–1.5 cm. long and 1–1.2 cm. wide; calyx little enlarged, without a tube, and with a narrow shallow cavity and spreading lobes, their tips often deciduous from the ripe fruit; flesh thin, hard and green; nutlets 3, gradually narrowed to the rounded ends, ridged on the back, with a broadly grooved ridge, about 8 mm. long and 5 mm. wide.

A shrub or small tree 3–4 m. high, with slender stems, and stout slightly zigzag branchlets marked by small dark lenticels, green tinged with red when they first appear, soon becoming bright red-brown and very lustrous, and dark dull gray-brown in their second year, and armed with slender straight or slightly curved shining spines 3.5–5 cm. long.

In dry soil near ledges, Stratford, Fairfield County, Connecticut,

E. H. Eames (nos. 144 type! 3495 and 3595), June and September 1901, May and September 1903.

Crataegus Robbinsiana, n. sp. Leaves ovate, acute or acuminate, rounded, truncate or cordate at the entire or crenate base, finely doubly serrate above, with straight glandular teeth, and more or less divided into 4 or 5 pairs of spreading acuminate lateral lobes, when they unfold deeply tinged with red, glabrous below and furnished above with short white hairs, nearly fully grown when the flowers open from the middle to the 20th of May and then membranaceous, pale yellow-green and still hairy above and pale below, and at maturity thin but firm in texture, smooth and dark green on the upper, pale on the lower surface, 3–5 cm. long and 2.5–3.5 cm. wide, with slender yellow midribs, and thin primary veins extending obliquely to the points of the lobes, often turning orange color tinged with red in the autumn before falling; petioles slender, slightly wing-margined at the apex, glandular, with minute stipitate dark glands, 1.4–2 cm. in length; stipules linear to linear-falcate, acuminate, finely glandular-serrate, mostly deciduous before the flowers open; leaves on vigorous shoots broadly ovate, mostly long-pointed, cordate or rarely truncate at the base, more coarsely serrate, more deeply lobed and frequently 6–7 cm. long and 5–6 cm. wide, with stout reddish conspicuously glandular petioles 1–2 cm. long. Flowers 1.2–1.5 cm. in diameter, on slender glabrous pedicels, in 6–10-flowered corymbs, with linear glandular bracts and bractlets fading brown and mostly deciduous before the flowers open; calyx-tube broadly obconic, glabrous, the lobes gradually narrowed from wide bases, acuminate at the gland-tipped apex, entire or slightly and irregularly toothed near the middle, reflexed after anthesis; stamens 7–10; anthers light rose color; styles 4 or 5, surrounded at the base by a ring of pale tomentum. Fruit ripening from the first to the middle of October, on slender pedicels, in few-fruited erect clusters, depressed-globose, rather broader than high, dull red and slightly pruinose, becoming lustrous and about 1.2 cm. in diameter; calyx little enlarged, without a tube, and with a deep narrow cavity, and spreading appressed lobes bright red on the upper side below the middle and mostly persistent on the ripe fruit; flesh thin, hard, greenish white; nutlets 4 or 5, full and rounded at the base, narrow and rounded at the apex, ridged on the back, with a high ridge, 6–7 mm. long and 4–5 mm. wide.

A tree occasionally 10 m. high, with a tall trunk 20–25 cm. in diameter, covered with light gray closely appressed scales, comparatively small erect branches forming an open erect head, and slender slightly zigzag branchlets marked by numerous dark lenticels, green tinged with red and glabrous when they first appear, bright chestnut-brown and lustrous during their first winter and pale gray-brown the following season, and armed with many slender or occasionally

stout nearly straight bright red-brown shining spines 3–4 cm. long; usually smaller and sometimes shrubby in habit.

Burlington, Vermont, *W. W. Eggleston* (no. 3475 type!), October 1903, May 1904, (no. 3472) October 1903, *A. W. Edson*, May 1900. Putney, Vermont, *W. W. Eggleston* (nos. 3391 & 3392), May and September 1903, *W. H. Blanchard* (no. 46), May and September 1903; Westminster, Vermont, *W. H. Blanchard* (no. 49), September 1902, May 1903; *Blanchard* and *Sargent*, May 1905. North Walpole, New Hampshire, *W. H. Blanchard* (no. 48), May and September 1903.

This handsome and widely distributed species is named in memory of James Watson Robbins (1801–1879) in his time "the most critical student of the botany of New England and the northern Atlantic States."

Crataegus levis, n. sp. Leaves ovate to oval, acute or acuminate, abruptly cuneate or rounded at the entire base, finely doubly serrate above, with straight or incurved glandular teeth, and slightly divided above the middle into 4 or 5 pairs of short acuminate lobes, when the flowers open during the last week of May thin, glabrous with the exception of a few soft hairs on the light yellow-green very smooth upper surface and pale or glaucous and glabrous below, and at maturity thin, but firm in texture, glabrous, blue-green above and pale blue-green below, 3.5–4.5 cm. long and 3–3.5 cm. wide, and on vigorous shoots sometimes 6 cm. long and 4–5 cm. wide, with very slender yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, nearly terete, glandular while young, with occasional minute dark red glands, often tinged with red early in the season, 2–3 cm. in length. Flowers 1.2–1.4 cm. in diameter, on stout elongated glabrous pedicels, in usually 5–8-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from wide bases, short, acuminate, obscurely serrate near the middle, glabrous, reflexed after anthesis; stamens 7–10; anthers deep rose color; styles 3 or 4. Fruit ripening the end of September, on drooping pedicels, in few-fruited clusters, obovate, full and rounded at the apex, gradually narrowed to the slender base, dull purple, very glaucous, 1.1–1.3 cm. long and 7–8 mm. wide; calyx little enlarged, with a wide shallow cavity, and spreading or reflexed serrate lobes dark red on the upper side toward the middle, their tips often deciduous from the ripe fruit; flesh thin, yellow, rather juicy; nutlets 3 or 4, usually 3, narrowed and rounded at the base, acute or acuminate at the apex, ridged on the back, with a high usually broad ridge, about 7 mm. long, and 4–5 mm. wide.

A slender shrub about 2 m. high, with small ascending stems and

branches covered with dark scaly bark, and slender nearly straight branchlets marked by small oblong lenticels, dull orange color and glabrous when they first appear, light chestnut-brown and lustrous during their first winter and dull reddish brown in their second year, and armed with slender nearly straight light chestnut-brown shining ultimately dull gray-brown spines 3–4 cm. long.

Moist rich pastures, Litchfield, Litchfield County, Connecticut, *C. H. Bissell* (no. 71 type!), September 1903, May 1904; *Bissell* and *Sargent*, September 1905.

Tenuifoliae.

Anthers rose color.

Stamens 10 or less.

Crataegus culta, n. sp. Leaves ovate, acuminate, broad and rounded at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided into 5 or 6 pairs of slender acuminate lobes, about half grown when the flowers open the middle of May and then dark yellow-green and roughened above by short white hairs and pale bluish green and glabrous below, and at maturity thick and firm, glabrous, dark blue-green on the upper and paler on the lower surface, 4–5 cm. long and 3–4 cm. wide, with stout midribs rose-colored below toward the base in the autumn, and slender obscure primary veins extending obliquely to the points of the lobes; petioles slender, grooved and sparingly villose while young on the upper side, soon glabrous, glandular, with minute dark often persistent glands, rose-colored in the autumn, 1.5–3 cm. in length. Flowers about 1.5 cm. in diameter, on slender elongated glabrous pedicels, in broad lax usually 10–12-flowered corymbs, with linear glandular caducous bracts and bractlets; calyx-tube narrowly obconic, glabrous, the lobes slender, long-pointed and acuminate at the rose-colored glandular apex, entire or sparingly dentate near the middle, glabrous, reflexed after anthesis; stamens 5–10; filaments rose color, persistent on the fruit; anthers dark rose color; styles 3 or 4. Fruit ripening and falling late in September, on slender drooping pedicels, in few-fruited clusters, short-oblong or ovate to subglobose, depressed at the insertion of the stalk, crimson, lustrous, marked by minute pale dots, 1–1.3 cm. long; calyx little enlarged with a narrow deep cavity, and spreading or reflexed lobes abruptly narrowed from broad bases, long-pointed, entire or obscurely and irregularly dentate, dark red on the upper side below the middle, mostly persistent on the ripe fruit; flesh thin, slightly juicy, greenish yellow; nutlets usually 3, rounded at the ends or, when 4, acute at the apex, ridged on the back, with a broad low grooved ridge, dark-colored, about 5 mm. long and nearly as wide.

A shrub 3–4 m. high, with long slender much branched stems forming an open irregular head, and slender nearly straight branchlets marked by crowded pale lenticels, dark green tinged with red when they first appear, becoming purple and rather lustrous during their first season and dull reddish brown the following year, and armed with short purplish shining ultimately gray spines 3–4 cm. long and persistent on the old branches and stems.

Rich moist hillsides, Shirley, Middlesex County, Massachusetts, *C. S. Sargent* (no. 5 type!), September 1902, *E. F. Thayer*, September 1904, May and June 1905. *Thayer* and *Sargent*, September 1905.

Crataegus Damei, n. sp. Leaves oblong-ovate or rarely oval, long-pointed and acuminate at the apex, rounded or cuneate at the entire base, sharply doubly serrate above, with slender glandular teeth, and divided into 5 or 6 pairs of narrow acuminate lobes usually pointing forward, deeply tinged with red when they unfold, nearly fully grown when the flowers open the middle of May and then membranaceous, yellow-green and roughened above by short rigid hairs and pale or glaucous and glabrous below, and at maturity very thin, dark blue-green and smooth or slightly roughened above and pale below, 4.5–5.5 cm. long and 3.5–4 cm. wide, with slender yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, grooved on the upper side, glabrous, 2–2.5 cm. in length; leaves on vigorous shoots broader in proportion to their length and often truncate at the base. Flowers about 1.5 cm. in diameter, on slender elongated glabrous pedicels, in compact usually 5–7-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes slender, entire, acuminate, red and glandular at the acuminate apex, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 10; anthers light pink; styles 2–4, surrounded at the base by a narrow ring of pale hairs. Fruit ripening at the end of September, on long slender drooping pedicels, in many-fruited clusters, oblong to obovate, gradually narrowed at the base, full and rounded at the apex, bright cherry red and lustrous, marked by numerous minute dots, 1.3–1.5 cm. long, about 8 mm. wide; calyx small, with a deep narrow cavity, and slender entire lobes red on the upper side below the middle and spreading or incurved; flesh thin, yellow, rather juicy; nutlets 2–4, narrowed and rounded at the base, acute at the apex, ridged on the back, with a high narrow ridge, about 7 mm. long and 4 mm. wide.

A shrub 4–5 m. high, with numerous slender spreading stems forming a wide open head, and very slender nearly straight branchlets marked by small dark lenticels, light orange-green and glabrous when they first appear, becoming chestnut-brown and somewhat lustrous during their first winter, dull reddish brown the following year, ulti-

mately ashy gray, and armed with occasional stout straight curved purplish spines 1.5–3 cm. long.

Banks of the Merrimack River near Lowell, Massachusetts, *Dame* and *Sargent*, September 1902, *C. S. Sargent*, May 1905.

This species, well distinguished by its very thin dark blue-green leaves and long narrow mostly pear-shaped fruits hanging on long slender stalks is named for the late Lorin Low Dame (1838–1903), one of the authors of *The Flora of Middlesex County, Massachusetts*, of *Typical Elms and other Trees of Massachusetts*, and of a *Handbook of the Trees of New England*, by whom it was first pointed out to me.

Crataegus serena, n. sp. Leaves ovate, acuminate, concave-cuneate or sometimes rounded at the broad base, finely often doubly serrate, with straight or incurved glandular teeth, and divided into 4 or 5 pairs of short broad acute spreading lobes, when they unfold deeply tinged with red especially on the lower surface and covered above with soft white hairs, about one-third grown when the flowers open from the 20th to the end of May and then thin, yellow-green and scabrate above and pale and glabrous below, and at maturity thin but firm in texture, dark dull yellow-green on the upper and paler on the lower surface, 5–6.5 cm. long and 3–5 cm. wide, with stout yellow midribs, and thin prominent primary veins arching obliquely to the points of the lobes; petioles slender, wing-margined at the apex, nearly terete, glabrous, glandular near the apex, with minute often persistent glands, 2–3 cm. in length; stipules linear-obovate, acute, glandular, fading brown, caducous; leaves on vigorous shoots long-pointed and divided by wide shallow sinuses, often 6–7 cm. long and wide, with stout conspicuously glandular rose-colored petioles. Flowers 1.5–1.7 cm. in diameter, on slender glabrous pedicels, in broad lax long-branched many-flowered crowded corymbs, with linear glandular caducous bracts and bractlets; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate, glandular on the margins and at the apex with large dark red glands, glabrous, spreading or reflexed after anthesis; stamens usually 7; anthers rose-colored; styles 3. Fruit on long slender drooping pedicels, in few-fruited clusters, oblong, full and rounded at the ends, scarlet, lustrous, marked by large pale lenticels, about 1.5 cm. long and 1 cm. wide; calyx enlarged, with a deep narrow cavity, and incurved slightly serrate lobes mostly persistent on the ripe fruit; flesh yellow, soft and sweet; nutlets 3, gradually narrowed and rounded at the ends, ridged on the back, with a broad, high ridge, about 7 mm. long and 4–5 mm. wide.

A shrub sometimes 5–7 m. high, with numerous slender erect many-branched stems spreading into broad thickets, and slender nearly straight branchlets marked by small pale lenticels, dark green tinged with red when they first appear, becoming light chestnut-red

and rather lustrous in their first season and light gray-brown the following year, and armed with numerous slender nearly straight bright red-brown shining spines usually 2–3 cm. long.

Roadsides and pastures, Lenox, Berkshire County, Massachusetts, common, *C. S. Sargent*, September and October 1902, May 1904.

Crataegus Paddockeae, n. sp. Leaves oblong ovate to oval, long-pointed and acuminate at the apex, full and rounded or rarely cuneate at the glandular base, finely doubly serrate above, with straight glandular teeth, and slightly divided into 5 or 6 pairs of small narrow acuminate lateral lobes, when they unfold slightly tinged with red, roughened above by short white hairs and glabrous below, more than half grown when the flowers open about the 20th of May and then very thin, light yellow-green and scabrate above, pale and glaucous below, and at maturity thin but firm in texture, dark yellow-green, smooth and lustrous on the upper and pale on the lower surface, 5.5–7 cm. long and 4.5–5 cm. wide, with stout yellow midribs, and slender primary veins arching obliquely to the points of the lobes, petioles slender, slightly wing-margined at the apex, nearly terete, glabrous, glandular, with scattered persistent glands, rose-colored in the autumn, 2–2.5 cm. in length; leaves on vigorous shoots often cordate at the base, coarsely serrate, more deeply lobed, with broad, spreading lobes, thick and leathery, often 7–8 cm. long and broad, with dark rose-colored midribs and stout conspicuously glandular petioles. Flowers small (petals not seen), on slender elongated glabrous pedicels, in mostly 10–12-flowered corymbs; calyx-tube narrowly obconic, glabrous, the lobes slender, acuminate and red at the apex, entire, or sparingly glandular near the middle, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 10; anthers small, rose color; styles 3 or 4. Fruit ripening by the middle of September, on slender elongated reddish drooping pedicels, in few-fruited clusters, short-oblong to obovate, full and rounded at the apex, narrowed below, lustrous, 1–1.2 cm. long, 8–10 mm. wide; calyx little enlarged, with a wide deep cavity and closely appressed lobes slightly hairy on the upper side, persistent on the ripe fruit; nutlets 3 or 4, full and rounded at the base, gradually narrowed and rounded or acute at the apex, irregularly ridged on the back, with a high slightly grooved ridge, 6–7 mm. long and about 4 mm. wide.

A shrub 5–6 m. high, with numerous stems, spreading branches, and slender slightly zigzag branchlets marked by numerous small pale lenticels, dark orange-yellow and glabrous when they first appear, light chestnut-brown and very lustrous during their first winter and dull dark red-brown the following year, and armed with many slender straight or slightly curved bright chestnut-brown shining spines 4–6 cm. long and usually pointed toward the base of the branch.

Valley of the Passumpsic River, Essex County, Vermont, *W. W. Eggleston*, north of Lyndonville (no. 3400 type!), Bloomfield (no. 3406).

This species is named for Miss Isabel Monteith Paddock, curator of the botanical department of the Fairbanks Museum of Natural Science, St. Johnsbury, Vermont.

Crataegus Napaea, n. sp. Leaves oblong-ovate, abruptly narrowed and long-pointed at the acuminate apex, rounded at the gradually narrowed base, sharply often doubly serrate, with straight glandular teeth, and deeply divided into 4 or 5 pairs of acuminate spreading lobes, more than half-grown when the flowers open about the 20th of May and then membranaceous, dark yellow-green, covered with short white hairs, and smooth and lustrous above and pale below, and at maturity thin, yellow-green and lustrous on the upper and pale on the lower surface, 7–9 cm. long and 5–7 cm. wide, with thin orange-colored midribs, and slender primary veins arching obliquely to the points of the lobes; petioles slender, wing-margined at the apex, nearly terete, glandular, with scattered persistent glands, rose-colored in the autumn, 3.5–4 cm. in length; leaves on vigorous shoots longer-pointed, often gradually narrowed and cuneate at the base, coarsely serrate, deeply lobed, often 9–10 cm. long and occasionally not more than 5–6 cm. wide, with stout broadly winged petioles. Flowers small (petals not seen), on long slender glabrous pedicels, in lax many-flowered corymbs, the lower branches from the axils of upper leaves; calyx narrowly obconic, glabrous, the lobes slender, elongated, acuminate, red at the apex, entire or sharply serrate near the middle, glabrous, reflexed after anthesis; stamens 5–7; filaments persistent on the fruit; anthers rose-colored; styles 3 or 4, usually 4. Fruit ripening about the 20th of September, on long slender drooping pedicels, in few-fruited clusters, oblong-obovate, dull red, 1–1.2 cm. long and 8–9 mm. wide; calyx prominent, with a wide shallow cavity, and small closely appressed persistent lobes; flesh thick, yellow, dry and mealy; nutlets usually 4, gradually narrowed and acute at the ends, very slightly ridged on the rounded back, 6–7 mm. long and about 5 mm. wide.

An arborescent shrub 5–6 m. high, with numerous stout ascending much branched stems spreading into broad thickets, and slender nearly straight branchlets marked by numerous small pale lenticels, dark olive-green tinged with red when they first appear, light chestnut-brown and lustrous during their first winter and dull reddish brown in their second year, and armed with slender nearly straight or curved light chestnut-brown shining spines 4–5 cm. long.

Low moist soil near the banks of a deep ravine on the Goddard Estate, near Litchfield, Litchfield County, Connecticut, *C. H. Bissell*

(no. 68 type!), May and September 1904, *Bissell* and *Sargent*, September 1905; Cornwall, Connecticut, *C. H. Bissell* (no. 54), May and September 1903.

Crataegus viridimontana, n. sp. Leaves ovate, long-pointed and acuminate at the apex, gradually narrowed and concave-cuneate at the glandular base, finely doubly serrate above, with incurved glandular teeth, and deeply divided into 5 or 6 pairs of slender acuminate spreading lobes, when they unfold tinged with red and coated with silky white hairs more abundant on the lower than on the upper side, nearly half grown when the flowers open about the 25th of May and then membranaceous, light yellow-green and roughened above by short white hairs and pale and glabrous below, and at maturity thick and firm in texture, dark green, lustrous and scabrate on the upper and pale on the lower surface, 5–5.5 cm. long and 4–5 cm. wide, with slender yellow midribs, and thin primary veins arching obliquely to the points of the lobes; petioles slender, slightly winged at the apex, glabrous, glandular toward the apex, rose-colored when they first appear, soon yellow, 2.5–3 cm. in length; stipules linear, glandular, fading rose color, caducous; leaves on vigorous shoots oblong-ovate to rhombic, long-pointed, cuneate at the base, coarsely serrate, deeply divided into broad spreading lobes, 7–9 cm. long and 5–7 cm. wide, with stout broadly winged conspicuously glandular petioles, and foliaceous lunate coarsely glandular-serrate persistent stipules. Flowers 1.6 cm. in diameter, on long slender glabrous pedicels, in mostly 5–9-flowered corymbs, with linear glandular caducous bracts and bractlets; calyx-tube narrowly obconic, glabrous, the lobes gradually narrowed from wide bases, elongated, acuminate and glandular at the apex, entire or sparingly glandular toward the middle, glabrous, reflexed after anthesis; stamens 5–10; anthers large, dark rose color; styles 2–4, usually 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening from the middle to the end of August and persistent for nearly another month, on slender elongated reddish pedicels, in few-fruited drooping clusters, short-oblong, full and rounded at the ends, crimson, slightly pruinose, marked by numerous small pale dots, 1.2–1.5 cm. long and about 1 cm. wide; calyx little enlarged, with a deep narrow cavity, and erect often incurved lobes only slightly glandular-serrate toward the base; flesh yellow, thick, soft and succulent; nutlets usually 4, gradually narrowed at the ends, rounded at the base, often acute at the apex, prominently ridged on the back, with a wide grooved ridge, dark-colored, 6–7 mm. long and about 5 mm. wide.

A shrub 5–7 m. high, with slender ascending stems forming an open irregular head, and stout nearly straight branchlets marked by numerous small pale lenticels, orange-green and glabrous when they first appear, bright chestnut-brown and very lustrous during their first winter, becoming pale gray-brown, and armed with numerous

stout nearly straight light chestnut-brown shining spines 3–3.5 cm. long.

In shady upland woods, East Middlebury, Vermont *Ezra Brainerd* (no. 109 type!), July and September 1900, May, July and August, 1901.

This species differs from *C. matura*, Sarg., to which it was first doubtfully referred, in its larger and more deeply lobed and much thicker leaves, larger fruit, and in its habit. As noted by President Brainerd *C. viridimontana*, more than any other species of western Vermont, grows in woods in the dense shade of other trees.

Stamens 18–20.

Crataegus Edsoni, n. sp.

Crataegus matura, Sarg., RHODORA, iii. 24 (1901) so far as relates to the flowers (see RHODORA, v. 144).

Leaves oblong-ovate to oval, acuminate, gradually narrowed and rounded or cuneate at the base, sharply often doubly serrate, with straight or incurved glandular teeth, and divided above the middle into 4 or 5 pairs of short broad acuminate spreading lobes, when they unfold deeply tinged with red and roughened above by short white hairs and sparingly villose below along the midribs and veins, when the flowers open during the last week in May membranaceous, light yellow-green above and pale below, and at maturity thin, dark yellow and smooth on the upper and paler on the lower surface, 6–8 cm. long and 5–6 cm. wide, with slender yellow midribs, and thin veins extending obliquely to the points of the lobes, turning dull orange color early in the autumn; petioles slender, narrowly wing-margined at the apex, nearly terete, glandular above the middle, with large persistent glands, 2–3 cm. in length; stipules linear, acuminate, glandular, caducous, leaves on vigorous shoots long-pointed, coarsely serrate, more deeply lobed, often 8–9 cm. long and 7 cm. wide, with stout petioles broadly winged to below the middle and often rose-colored toward the base in the autumn. Flowers about 1.8 cm. in diameter, on long slender glabrous pedicels, in compact usually 7- or 8-flowered corymbs, with linear-obovate glandular bracts and bractlets; calyx-tube narrowly obconic, glabrous, the lobes slender, red and glandular at the acuminate apex, entire or occasionally dentate near the base, glabrous, reflexed after anthesis; stamens 18–20; filaments persistent, dark red and conspicuous on the fruit; anthers pink; styles 3–5, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening early in September, on slender drooping reddish pedicels, in many-fruited clusters, subglobose to short-oblong on obovate, bright cherry red, lustrous, marked by small pale dots, 1.3–1.5 cm. in diameter; calyx little enlarged, with a broad deep cav-

ity, and small closely appressed lobes dark red on the upper side below the middle, often deciduous from the ripe fruit; flesh thin, yellow, acidulous, of agreeable flavor; nutlets 3–5, narrowed and rounded at the ends, ridged, with a low narrow ridge, or rounded and grooved on the back, about 7 mm. long and 4–5 mm. wide.

A broad shrub, with spreading stems 2–3 m. high forming large clumps, slender nearly straight branchlets marked by small pale lenticels, light orange-yellow more or less tinged with red and glabrous when they first appear, dark orange-brown and lustrous in their first season and dull grayish or reddish brown the following year, and armed with numerous stout nearly straight bright chestnut-brown shining spines 2.5–3.5 cm. long.

Pastures in low moist soil, Burlington, Vermont, *A. W. Edson*, May 1900, *W. W. Eggleston* (nos. 2280 & 2870 type!), September 1901, May 1902, (nos. 2344 & 3476), May and October 1903; Westminster, Windham County, Vermont, *W. H. Blanchard* (no. 78), May and September 1903; North Walpole, Cheshire County, New Hampshire, *W. H. Blanchard* (no. 34), September 1902, May 1903, *W. W. Eggleston* (no. 2928), October 1902, May and September 1903; Lansingburg, Rensselaer County, New York, *Charles H. Peck* (no. 15 b), May and September 1903.

Crataegus Edsoni appears to be most closely related to *C. Forbesae*, Sarg., of central Massachusetts and Connecticut, differing from that species in its thinner and more deeply lobed leaves, pink, not dark red, anthers, and larger fruit. It is named for its discoverer, the late Arthur Woodbury Edson, a student at the University of Vermont and at the time of his death in June 1905 assistant physiologist in the Bureau of Plant Industry of the Department of Agriculture of the United States, in charge of experiments in Texas in breeding cotton. (See *Science*, n. ser. XXII. 61.)

MOLLES.

Stamens 10; anthers pale pink.

Crataegus lauta, n. sp. Leaves ovate, acuminate, broad and rounded or truncate or occasionally cuneate at the entire base, sharply doubly serrate above, with straight glandular teeth, and slightly divided into 5 or 6 pairs of small acuminate lateral lobes, about $\frac{1}{3}$ grown when the flowers open from the 15th to the 20th of May and then membranaceous, yellow-green and roughened above

by short white hairs and villose below along the midribs and veins, and at maturity thin, bluish green and scabrate on the upper and yellow-green on the lower surface, 6–7 cm. long and 5–6 cm. wide, with stout yellow midribs, and slender sparingly villose or pubescent primary veins; petioles slender, wing-margined at the apex, nearly terete, villose through the season, tinged with rose color at the base in the autumn, 2.5–3 cm. in length; stipules lanceolate, glandular, caducous; leaves on vigorous shoots slightly cordate at the broad base, coarsely serrate, more deeply lobed, thicker, often 10–12 cm. long and 8–9 cm. wide, with stout broadly winged conspicuously glandular petioles, and foliaceous lunate coarsely serrate persistent stipules. Flowers 2 cm. in diameter, on slender elongated villose pedicels, in compact hairy usually 8–12-flowered corymbs, with oblong-obovate to linear glandular bracts and bractlets mostly persistent until the flowers open; calyx tube narrowly obconic, clothed with matted pale hairs, the lobes broad, acuminate, coarsely glandular serrate usually only below the middle, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 10; anthers pale pink; styles 5, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening at the end of September, on stout slightly villose drooping pedicels, in few-fruited clusters, short-oblong to oblong, full and rounded and pubescent at the ends, slightly concave at the insertion of the pedicels, bright orange-red, lustrous, marked by numerous small dark dots, 1.6–2 cm. long and 1.5–1.8 cm. wide; calyx only little enlarged, with a deep narrow cavity, and erect laciniately glandular-serrate lobes rose-colored on the inner side toward the base and persistent on the ripe fruit; flesh thick, yellow, slightly juicy, firm and hard; nutlets 5, narrow and rounded at the base, acute at the apex, slightly and irregularly ridged on the back, 8–9 mm. long and 5–6 mm. wide.

A pyramidal arborescent shrub, with erect stems covered with ashy gray bark, small spreading and ascending branches, and stout slightly zigzag branchlets marked by many small lenticels, green slightly tinged with red and sparingly villose when they first appear, soon glabrous and dark olive green and lustrous, light olive green in their second season, and armed with many stout nearly straight light chestnut-brown shining spines 4–5 cm. long.

The description of this plant is drawn from a specimen cultivated in Olmsted Park, Boston. This is one of 700 plants, all similar in habit and foliage and in the characters of the flowers and fruit planted in the Boston parks and raised about fifteen years ago at the Framingham nurseries in South Framingham, Massachusetts, from seeds produced by a plant still growing in the Harvard Botanic Garden. The origin of this plant is unknown. It is one of a collec-

tion of thorns, however, planted by me in the garden perhaps about 1875 and, like other trees and shrubs planted there at that time, it was probably raised from seeds at the Arnold Arboretum.

FLABELLATAE.

Stamens 5; anthers rose color.

Crataegus ampla, n. sp. Leaves ovate, acuminate, rounded, truncate or rarely cuneate at the base, sharply often doubly serrate, with slender straight glandular teeth, and divided into 5 or 6 pairs of broad acuminate lateral lobes, slightly tinged with red and villose on the upper surface when they unfold, nearly half grown when the flowers open about the 20th of May and then membranaceous, light yellow-green and roughened above by short lustrous white hairs and pale and glabrous below, and at maturity thin, dark yellow-green and scabrate on the upper and paler on the lower surface, 6–7 cm. long and 5–6.5 cm. wide, with stout yellow midribs, and slender primary veins arching obliquely to the points of the lobes; petioles slender, nearly terete, glabrous, glandular near the apex, with occasional minute usually persistent glands, rose-colored in the autumn, 1.5–3 cm. in length; stipules oblong-obovate, often falcate, glandular, fading brown, caducous; leaves on vigorous shoots truncate or slightly cordate at the base, more coarsely serrate and more deeply lobed, and 7–8 cm. long and broad. Flowers about 1.5 cm. in diameter, on slender elongated glabrous pedicels, in usually 7–10-flowered corymbs, with oblong-obovate to linear glandular rose-colored bracts and bractlets; calyx-tube broadly obconic, glabrous, the lobes wide, foliaceous, acuminate, coarsely laciniately serrate, glandular, with large dark red glands, glabrous on the outer, sparingly villose on the inner surface, spreading or reflexed after anthesis; stamens 5; anthers dark rose color; styles 3, surrounded at the base by a broad ring of hairy tomentum. Fruit ripening early in October, on slender drooping pedicels, in few-fruited clusters, obovate, rounded at the apex, gradually narrowed to the base, bright cherry red, lustrous, marked by small pale dots, about 1.2 cm. long and 1 cm. wide; calyx little enlarged, with a broad deep cavity and spreading appressed coarsely serrate lobes, their tips often deciduous from the ripe fruit; flesh thin, yellow, dry and mealy; nutlets 3, narrowed and rounded at the ends or acute at the apex, ridged on the back, with a broad high deeply grooved ridge, about 8 mm. long and 4–5 mm. wide.

A shrub 4–5 m. high, with numerous stout ascending many-branched stems covered with dark gray bark and forming a broad round-topped compact head, and slender, slightly zigzag branchlets marked by small oblong pale lenticels, dark orange-green when they

first appear, becoming bright chestnut-brown and very lustrous, in their first season, gray tinged with red the following year and ultimately ashy gray, and armed with slender straight or slightly curved bright chestnut-brown shining spines 3–4 cm. long.

Rocky pastures near Balance Rock, Lanesborough, Berkshire County, Massachusetts, *C. E. Faxon*, September 1899, *C. S. Sargent*, October, 1902, May 1904.

The relationship of this species is with the widely distributed *C. Holmesiana*, Ashe, from which it differs in its broad-ovate, not oval leaves, larger flowers and obovate later-ripening fruit.

Anomalae, Sarg. Rhodora, iii. 29 (1901).

Leaves cuneate, thickish to subcoriaceous, scabrate above while young; petioles slender, elongated. Flowers in many-flowered corymbs; anthers rose-colored or pink. Fruit short-oblong, orange-scarlet, 1–1.4 cm. in length; nutlets occasionally furnished with obscure ventral depressions. Mostly arborescent shrubs, all of western New England, eastern New York and the St. Lawrence valley near Montreal.

To this group, which is intermediate between the *Tomentosae* and the *Coccineae*, may be referred in addition to the following *C. asperifolia*, Sarg., *C. scabrida*, Sarg., *C. Brainerdi*, Sarg., and *C. Egglestoni*, Sarg.

Stamens 20.

Crataegus Seelyana, n. sp. Leaves obovate to oval, acuminate and often short-pointed at the apex, gradually narrowed and concave-cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided above the middle into 4 or 5 pairs of short spreading acuminate lobes, when they unfold coated above with short white lustrous hairs and glabrous below, about half-grown when the flowers open at the end of May and then thin, yellow-green and slightly roughened above and pale below, and at maturity thick, glabrous, smooth and dark yellow-green on the upper, and pale or glaucous on the lower surface, 5–6.5 cm. long and 3.5–5 cm. wide, with stout yellow midribs, and slender veins extending obliquely to the points of the lobes; petioles slender, wing-margined at the apex, slightly grooved, glabrous, sparingly glandular, about 2 cm. in length; stipules linear, acuminate, glandular, bright rose color, caducous; leaves on vigorous shoots abruptly long-pointed, often rounded at the broad base, more deeply lobed, sometimes 6–7 cm. long and 4–5 cm. wide. Flowers 1.8 cm. in diameter, on slender

elongated glabrous pedicels, in usually 12–15-flowered corymbs, with linear-obovate to lanceolate glandular bracts and bractlets, bright rose color like the inner bud-scales and deciduous before the flowers open; calyx-tube narrowly obconic, glabrous, the lobes glandular-serrate usually only above the middle, or occasionally nearly entire, glabrous, reflexed after anthesis: stamens 20; anthers pale pink; styles 3, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening at the end of September, on slender pedicels, in few-fruited clusters, short-oblong, lustrous, dull orange-red, about 1 cm. long and 7 cm. wide; calyx prominent, with a broad deep cavity, and appressed lobes mostly deciduous from the ripe fruit; flesh thin, yellow, dry and mealy; nutlets 3, rounded at the ends, slightly ridged on the back, with a broad low ridge, sometimes slightly hollow on the inner faces, 7–8 mm. long and 4–5 mm. wide.

An arborescent shrub 3–4 m. high, with ascending stems and stout nearly straight branchlets marked by small pale lenticels, deeply tinged with red and glabrous when they first appear, light chestnut-brown and very lustrous during their first winter and dark gray the following year, and armed with many stout nearly straight light chestnut-brown shining spines 2.5–5 cm. long.

Roadsides near Middlebury, Vermont, *Ezra Brainerd* (no. 6 A), May and September 1900, May 1901.

Formerly referred to *C. Brainerdi*, Sarg., but now distinguished from that species by the shape of the leaves, the color of the anthers the smaller fruits and by the more arborescent habit. It is named for Henry Martin Seely (1828–), for many years professor of chemistry and natural history in Middlebury College, teacher of botany and distinguished paleontologist.

Stamens 7–10.

Crataegus cyclophylla, n. sp. Leaves broadly ovate to suborbicular or rarely rhombic, short-pointed and acuminate at the apex, cuneate and entire at the base, sharply doubly serrate above, with straight or incurved glandular teeth, and slightly divided above the middle into 4 or 5 pairs of slender acuminate lobes, faintly tinged with red when they unfold, about half-grown when the flowers open the 1st of June and then thin, light yellow-green and somewhat roughened above by short white hairs and pale and glabrous below, and at maturity thick to subcoriaceous, dark yellow-green, lustrous, smooth or still slightly rough on the upper and pale on the lower surface, 5–6 cm. long and 4–5.5 cm. wide, with thick yellow midribs, and stout primary veins arching obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, grooved on the upper

side, glabrous, glandular toward the apex, with minute deciduous glands, often rose color in the autumn, 2–2.5 cm. in length; stipules linear, acuminate, glandular, fading brown, caducous; leaves on vigorous shoots suborbicular to broad-obovate, coarsely serrate, only slightly lobed, subcoriaceous, often 6–7 cm. long and wide, with stout glandular petioles. Flowers 1.6–1.8 cm. in diameter, on slender glabrous pedicels, in compact usually 12–15-flowered corymbs, with linear glandular rose-colored bracts and bractlets; calyx-tube narrowly obconic, acuminate and red at the apex, glandular with minute dark red stipitate glands, reflexed after anthesis; stamens 7–10; anthers rose color; styles 3 or 4. Fruit ripening the end of September and persistent until winter, on slender reddish pedicels, in drooping few-fruited clusters, subglobose to short-oblong, orange-red, marked by small pale dots, 1.2–1.4 cm. long and about 1 cm. wide; calyx only slightly enlarged, with a wide deep cavity and spreading red lobes, their tips often deciduous from the ripe fruit; flesh thin, yellow, dry and mealy; nutlets 3 or 4, full and rounded at the ends, ridged on the back, with a high rounded ridge, 7–8 mm. long and 4–5 mm. wide.

An arborescent shrub 4–5 m. high, with ascending stems 5–7 cm. in diameter near the ground, and stout nearly straight branchlets marked by small oblong pale lenticels, light orange-green and glabrous when they first appear, light orange-brown and very lustrous during their first winter and dark gray-brown the following year, and armed with numerous stout nearly straight bright chestnut-brown and shining ultimately dull gray-brown spines 3–3.5 cm. long.

Roadsides, New Haven, Addison County, Vermont, *Ezra Brainerd* (no. 16a), June and September 1900, May 1901; *Brainerd* and *Sargent*, Sept. 1900.

The relationship of this species is with *C. Egglestoni*, Sarg., from which it differs in its much thicker semiorbicular leaves, larger flowers, glabrous corymbs and calyx-lobes, larger fruits and darker-colored nutlets, with dorsal ridges without grooves or only slightly grooved, and in the color of the branchlets and the length and color of the spines.

Crataegus Ideae, n. sp. Leaves, oval to ovate or obovate, short-pointed and acute at the apex, concave-cuneate and entire at the base, finely and occasionally doubly serrate above, with incurved conspicuously glandular teeth, and slightly divided above the middle into broad acute lobes, faintly tinged with red when they unfold, more than half grown when the flowers open at the end of May and then thin, light yellow-green and covered above by short white hairs and pale and glabrous below with the exception of a few axillary hairs, and at

maturity subcoriaceous, bright green, lustrous and sparingly hairy along the midribs on the upper and pale yellow-green and glabrous on the lower surface, 4–5 cm. long and 3.5–4 cm. wide, with stout yellow midribs rose-colored below toward the base, and slender prominent primary veins extending obliquely to the points of the lobes; petioles slender, narrowly wing-margined at the apex, grooved and villose on the upper side, glandular, with bright red mostly deciduous glands, rose-colored in the autumn, 1.5–2.5 cm. long; stipules oblong, acute, glandular, fading rose color, caducous; leaves on vigorous shoots broadly ovate, abruptly pointed or occasionally cuneate at the base, often 4 or 5 cm. long and 4 cm. wide. Flowers about 1.5 cm. in diameter, on elongated slender pedicels covered with long scattered white hairs, in wide lax many-flowered hairy corymbs, with oblong-obovate to linear bright rose-colored glandular bracts and bractlets mostly persistent until after the flowers have opened; calyx-tube narrowly obconic, glabrous or sparingly villose near the base, the lobes broad, gradually narrowed to the red glandular acuminate apex, obscurely serrate near the middle, glabrous on the outer, villose on the inner surface, reflexed after anthesis; stamens 10; anthers light pink; styles 3 or 4. Fruit ripening the middle of September, on stout slightly hairy erect red pedicels, in few-fruited clusters, short-oblong to subglobose, crimson, marked by large pale dots, about 1 cm. in diameter; calyx prominent, with a broad deep cavity and spreading lobes glandular-serrate above the middle, dark red and villose on the upper side, mostly persistent on the ripe fruit; flesh yellow, dry and mealy; nutlets 3 or 4, full and rounded at the ends, slightly ridged on the back, with a low narrow ridge, sometimes obscurely and irregularly pitted on the inner face, light-colored, about 7 mm. long and 4–5 mm. wide.

A tall much branched shrub forming wide thickets, with slender nearly straight branchlets marked by occasional large pale lenticels light yellow-green more or less tinged with red and nearly glabrous when they first appear, soon becoming bright chestnut-brown, dull reddish brown in their second and ashy gray in their third year, and armed with slender straight or slightly curved bright chestnut-brown shining spines 4.5–6 cm. long.

Hillside pastures at an altitude of about 500 metres, Concord, Essex County, Vermont; very abundant. *W. W. Eggleston* (nos. 3404, 3405 and 3405 A, type!), May and September 1903 and May 1905.

This species is named for Miss Mary Ellen Ide of the Fairbanks Botanical Museum, St. Johnsbury, Vermont.

Coccineae.

Stamens 10 or less.

Anthers white.

Crataegus Gravesii, Sarg. Rhodora, v. 160 (June 1903). An older name for this species is *C. Dodgei*, Ashe, *Jour. Elisha Mitchell Sci. Soc.* xix. 26 (March 1903). It is now known to range from Middlesex and Worcester Counties, Massachusetts (Shirley and Lancaster, *E. F. Thayer*) to western New York, and through Ontario to eastern Michigan, and to occur in eastern Pennsylvania.

Crataegus praetermissa, n. sp. Leaves broadly ovate to suborbicular or rarely oval, short-pointed and acuminate at the apex, broad, rounded or truncate or gradually narrowed and concave-cuneate at the glandular base, finely and often doubly serrate above, with straight gland-tipped teeth, and deeply divided into 4 or 5 pairs of slender acuminate lobes, more than half-grown when the flowers open the middle of May and then thin, yellow-green, lustrous and roughened above by short white hairs and paler and villose below especially along the midribs and veins, and at maturity thin but firm in texture, dark yellowish green, smooth and lustrous on the upper and pale and still villose on the lower surface along the slender yellow midribs, and thin veins arching obliquely to the points of the lobes, 5–6 cm. long and often as broad as long; petioles slender, slightly wing-margined at the apex, grooved on the upper side, glandular, with generally persistent glands, at first densely villose, becoming puberulous or nearly glabrous, 2–3 cm. in length. Flowers on short stout densely villose pedicels, in usually 5–7-flowered hairy corymbs; calyx-tube narrowly obconic, thickly coated with matted pale hairs, the lobes broad, acuminate, finely glandular-serrate, densely villose on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 5–10; anthers white; styles 3 or 4. Fruit ripening about the middle of September and remaining on the branches until early in October, on long slender drooping sparingly hairy reddish pedicels, in few-fruited clusters, short-oblong to ovate, crimson, marked by small pale dots, hairy especially at the ends, 1–1.2 cm. long, 8–9 mm. in diameter, calyx little enlarged, with a wide deep cavity and spreading closely appressed villose lobes, their tips often deciduous from the ripe fruit; flesh thin, yellow, green, dry and mealy; nutlets 3 or usually 4, rounded at the base, gradually narrowed and rounded at the apex, only slightly ridged on the narrow back, about 7 mm. long and 4–5 mm. wide.

A shrub 2–3 m. high, with slender erect intricately branched stems, and very slender nearly straight branchlets marked by oblong pale lenticels, light green and thickly coated with matted pale hairs

when they first appear, soon glabrous and light bright chestnut-brown and very lustrous during their first year, becoming dull reddish brown the following season, and armed with slender straight chestnut-brown shining spines 3–5 cm. long.

Rocky borders of woods, eastern base of Marsh Hill, Ferrisburg, Addison County, Vermont, *Ezra Brainerd* (no. 17 b type!), August 1900, October 1901, 1903, *Brainerd and Sargent*, September 1905, *W. W. Eggleston* (no. 3338), May 1903.

Formerly referred to *C. coccinea*, Linnaeus, *C. praetermissa* differs from that species in its much thinner broader and more deeply lobed leaves and fewer-flowered corymbs, in its narrow pointed and only slightly ridged nutlets, and in its hairy fruit. It resembles *C. Faxoni*, Sarg., in the general shape of the leaves, but the leaves of *C. Faxoni* are much thicker, less deeply lobed and more hairy on the two surfaces while young, the pedicels are longer and soon glabrous, the fruit is larger, and the nutlets are longer, with more prominent dorsal ridges.

Anthers rose color or pink.

Crataegus propria, n. sp. Leaves ovate, acuminate, rounded or cuneate at the entire base, finely and often doubly serrate above, with incurved glandular teeth, and slightly divided above the middle into 4 or 5 pairs of broad acuminate spreading lobes, tinged with red when they unfold, about half grown when the flowers open the middle of May and then thin, yellow-green and covered above by short white lustrous hairs and pale and glabrous below, and at maturity thin and firm, glabrous, dark dull yellow-green on the upper, pale on the lower surface, 4–5 cm. long and 3–4 cm. wide, with slender yellow midribs sometimes tinged with red toward the base, and thin primary veins extending obliquely to the points of the lobes; petioles slender, wing-margined at the apex, slightly grooved, pubescent while young, soon becoming glabrous, glandular toward the apex, with minute dark stipitate glands; usually rose color in the autumn, 1.6–2 cm. in length; stipules linear, glandular, fading brown, caducous. Flowers on slender pedicels coated with matted pale hairs, in compact usually 9–12-flowered corymbs, with linear acuminate rose-colored bracts and bractlets; calyx-tube narrowly obconic, glabrous except at the base, the lobes slender, acuminate and red at the apex, glandular on the margins, glabrous on the outer, puberulous on the inner surface, reflexed after anthesis; stamens 5; anthers pale rose color; styles 2 or 3. Fruit ripening at the end of September and soon falling, on slender glabrous reddish pedicels, in small drooping few-fruited clusters, oblong, sometimes slightly ovate, full and rounded at the ends,

scarlet, lustrous, marked by small pale dots, 1–1.2 cm. long, 7–8 mm. wide; calyx prominent, with a narrow deep cavity, and reflexed closely appressed lobes pubescent on the upper side and often deciduous from the ripe fruit; flesh thick, orange color, becoming soft or succulent; nutlets usually 2, rounded at the ends or, when 3, acute at the apex, ridged on the back, with a high narrow ridge, about 7 mm. long and 5 mm. wide.

A shrub 3–5 m. high, with numerous stout ascending stems forming a broad round-topped head, and slender nearly straight branchlets marked by oblong pale lenticels, dark orange color and glabrous or slightly villose when they first appear, soon glabrous, bright chestnut-brown and lustrous during their first winter and dull gray-brown the following year, and armed with stout slightly curved bright chestnut-brown shining ultimately dull gray-brown spines 3–3.5 cm. long.

Low moist pastures, South Lancaster, Massachusetts, *E. I. Thayer* (no. 3, Parker Pasture, type!), September 1902, May and August 1903.

Crataegus Websteri, n. sp. Leaves oval, or sometimes oblong-obovate on vigorous shoots, acute or acuminate, gradually narrowed and concave-cuneate at the entire base, finely doubly serrate above, with straight glandular teeth, and slightly divided above the middle into 3 or 4 pairs of small spreading acuminate lobes, nearly fully grown when the flowers open late in May and then thin, light yellow-green and roughened above by short white hairs and pale and glabrous below with the exception of a few axillary hairs, and at maturity thin but firm in texture, dark yellow-green, nearly smooth on the upper and pale yellow-green on the lower surface, 5–6.5 cm. long and 3.5–4 cm. wide, with stout yellow midribs and slender conspicuous veins extending obliquely to the points of the lobes; petioles slender, slightly wing-margined at the apex, nearly terete, glandular, with minute stipitate mostly persistent glands, glabrous, 2–2.5 cm. in length. Flowers about 1.5 cm. in diameter, on long slender sparingly villose pedicels, in broad lax usually 8–14-flowered slightly hairy corymbs; calyx-tube narrowly obconic, slightly villose below the middle, glabrous above, the lobes gradually narrowed, acuminate, glandular serrate near the middle, glabrous on the outer and slightly hairy on the inner surface, reflexed after anthesis; stamens 7–10; anthers pale pink; styles 3, surrounded at the base by a narrow ring of white hairs. Fruit ripening the middle of September, on long drooping hairy pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends, bright cherry red, lustrous, marked by large pale dots, 1–1.2 cm. long, 8–10 mm. wide; calyx enlarged, with a broad shallow cavity, and spreading slightly serrate lobes red and villose on the upper surface; flesh thin, yellow, dry and mealy; nutlets broad and rounded at the base, narrowed and rounded at the apex, ridged on the back, with a broad deeply grooved ridge, 6–7 mm. long and about 4 mm. wide.

An arborescent shrub 4–5 m. high, with a short trunk occasionally 15–18 cm. in diameter, spreading branches forming a wide open head, and stout zigzag branchlets marked by oblong pale lenticels, dark orange green and slightly hairy when they first appear, becoming pale chestnut-brown and very lustrous, light reddish brown the following season, and ashy gray in their third year, and armed with very numerous slender nearly straight light chestnut-brown shining ultimately dull gray-brown spines 7–8 cm. long.

Hillsides, Holderness, Grafton County, New Hampshire, at elevations of from 250 to 300 m. above the sea, *L. S. Webster* (no. 6 type ! and 5), May and September 1903.

This species is named for its discoverer, Mr. Laurence J. Webster of Holderness.

Crataegus Lemingtonensis, n. sp. Leaves broadly ovate, acuminate, rounded or cuneate at the broad base, finely often doubly serrate above, with slender straight glandular teeth, and divided into 4 or 5 pairs of short narrow acuminate spreading lobes, about half grown when the flowers open during the last week in May and then thin, light yellow-green and roughened above by short white hairs and pale and glabrous below, and at maturity thin, glabrous, yellow-green and smooth on the upper, paler on the lower surface, 4–5 cm. long and wide, with thin yellow midribs, and slender primary veins arching obliquely to the points of the lobes ; petioles slender, slightly wing-margined at the apex, glabrous, glandular, with minute scattered persistent glands, 2–3 cm. in length ; stipules linear, glandular, fading rose color, caducous ; leaves on vigorous shoots often truncate or subcordate at the broad base, coarsely serrate, more deeply divided into broad acuminate lobes, often 6 cm. long and wide. Flowers about 1.2 cm. in diameter, on elongated slender villose pedicels, in compact mostly 7- or 8-flowered hairy corymbs ; calyx tube narrowly obconic, coated with long matted pale hairs, the lobes slender, acuminate, slightly glandular-serrate, villose, reflexed after anthesis ; stamens 10 ; anthers pink ; styles 3 or 4, surrounded at the base by a narrow ring of pale tomentum. Fruit ripening about the 10th of September, on slender drooping slightly villose pedicels, in few-fruited clusters, short-oblong, full and rounded at the ends, scarlet, lustrous, marked by occasional pale dots; calyx prominent, with a wide shallow cavity, and spreading or closely appressed lobes covered above with long white hairs, mostly persistent on the ripe fruit ; flesh thick, yellow, soft and succulent; nutlets usually 3, gradually narrowed and rounded at the ends, ridged on the back, with a broad deeply grooved ridge, 6–7 mm. long and 4–5 mm. wide.

An arborescent shrub 4–5 m. high, with numerous ascending stems spreading into great thickets, and stout zigzag branchlets marked by

oblong pale lenticels, pale yellow-green and glabrous when they first appear, dull chestnut-brown during their first and light gray-brown in their second year, and armed with stout slightly curved chestnut-brown shining spines 4–5 cm. long and often pointed toward the base of the branch.

Hillsides, Essex County, Vermont; common; Lemington, Canaan, Bloomfield, *W. W. Eggleston* (no. 3408 type! Lemington); also the adjacent parts of New Hampshire.

Stamens 20; anthers pink.

Crataegus insolens, n. sp. Leaves oblong-ovate, acute or acuminate, gradually or abruptly cuneate or rounded at the base, finely often doubly serrate, with straight or incurved teeth tipped with bright red glands, and sharply and slightly divided into 4 or 5 pairs of slender acuminate lobes, deeply tinged with red and covered above when they unfold with soft white hairs and glabrous below, more than half grown when the flowers open during the last week of May and then thin but firm in texture, pale yellow-green, still hairy and slightly roughened above and pale or glaucous below, and at maturity thin, dark green and nearly smooth on the upper and pale yellow-green on the lower surface, 4–5 cm. long and 3–3.5 cm. wide, and on vigorous shoots 6–7 cm. long and 5–6 cm. wide, with slender yellow midribs, and thin primary veins extending obliquely to the points of the lobes; petioles slender, wing-margined at the apex, slightly grooved, glandular near the apex, with minute mostly early deciduous glands, glabrous, 2.5–3 cm. in length. Flowers on long slender slightly villose pedicels, in usually 7–10-flowered hairy corymbs, the lower peduncles from the axils of upper leaves, their bracts and bractlets linear, glandular, fading brown, caducous; calyx-tube narrowly obconic, glabrous, or villose at the base, the lobes gradually narrowed from wide bases, acuminate, irregularly glandular-dentate near the middle, glabrous on the outer, sparingly villose on the inner surface, reflexed after anthesis; stamens 20; anthers small, pink; styles 3–5. Fruit ripening the middle of September, on erect reddish pedicels, in 1–3-fruited clusters, short-oblong, rounded at the ends, scarlet, lustrous, 1–1.2 cm. long and 8–10 mm. wide; calyx little enlarged, with a broad shallow cavity, and spreading and reflexed lobes, their tips often deciduous from the ripe fruit; flesh thin, yellow-green, dry and hard; nutlets 3–5, rounded at the obtuse ends, or when more than 3 narrowed at the ends and acute at the apex, ridged on the back with a broad often deeply grooved ridge, about 7 mm. long and 4 mm. wide.

A shrub 3–4 m. high, with numerous stems spreading into broad thickets, and slender nearly straight branchlets marked by oblong

pale lenticels, orange-green more or less tinged with red and slightly hairy, with scattered pale hairs, when they first appear, soon glabrous, bright chestnut-brown and very lustrous during their first season and light reddish brown the following year, and armed with numerous straight or slightly curved bright chestnut-brown shining spines 3.5–5 cm. long.

Hillsides, West Concord, Essex County, Vermont, *W. W. Eggleston* (no. 3403 type!), May and September 1903.

Crataegus Blanchardi, n. sp. Leaves ovate, short-pointed and acuminate at the apex, abruptly or gradually narrowed and cuneate at the entire base, finely often doubly serrate above, with straight glandular teeth, and divided into 4 or 5 pairs of narrow acuminate lateral lobes, when they unfold bronze color, glandular at the base, and covered with long white hairs more abundant on the upper than on the lower surface, nearly half grown when the flowers open about the 20th of May and then thin, yellow-green above and paler and sparingly villose below along the midribs and veins, and at maturity subcoriaceous, dark green and lustrous on the upper and pale yellow-green and almost glabrous on the lower surface, 4.5–6 cm. long and 4.5–5 cm. wide, with stout yellow midribs and slender veins arching obliquely to the points of the lobes; petioles slender, wing-margined at the apex, slightly grooved, at first villose, becoming glabrous, and glandular, with minute mostly caducous glands; stipules linear, glandular, fading brown, caducous; leaves on vigorous shoots rounded or truncate at the base, coarsely serrate, deeply lobed, 6–7 cm. long and wide, with stout broadly winged petioles glandular through the season. Flowers 1.5–1.7 cm. in diameter, on long stout densely villose pedicels, in thick-branched hairy corymbs, with oblong to linear obovate glandular bracts and bractlets often persistent until the flowers open; calyx-tube broadly obconic, covered below with long matted pale hairs and glabrous above, the lobes gradually narrowed from wide bases, short, acuminate, glandular-serrate near the middle, glabrous on the outer, slightly villose on the inner surface, reflexed after anthesis; stamens 20; anthers pale pink, styles 3–5, surrounded at the base by a narrow ring of pale hairs. Fruit ripening at the end of September, on thick erect slightly villose pedicels, in few often 3–6-fruited clusters, short-oblong, full and rounded at the ends, dark cherry red, lustrous, marked by small pale dots; calyx little enlarged, with a wide shallow cavity, and spreading and appressed serrate lobes villose on the upper side and often deciduous from the ripe fruit; flesh thick, yellow, soft and pulpy; nutlets 3–5, rounded at the base, acute at the apex, ridged on the back, usually with a high narrow slightly grooved ridge, or when only 3 full and rounded at the ends, with a broad deeply grooved ridge, 6–7 mm. long and about 4 mm. wide.

A shrub 3–4 m. high, with numerous stems spreading into thickets,

and slender nearly straight branchlets marked by pale lenticels, dark orange-green when they first appear, light chestnut-brown and lustrous in their first winter, lighter-colored in their second season, and light gray-brown the following year, and armed with many stout slightly curved bright chestnut-brown shining ultimately dark gray-brown spines 4–5 cm. long.

Hillsides, Deerfield River Valley, Windham County, Vermont; common. Wilmington and Whitington, *W. H. Blanchard* (no. 7), August 1902, *W. W. Eggleston* (nos. 3451, 3452 type! and nos. 3446, 3449, 3453), May and September 1903.

This species is named for William Henry Blanchard, an industrious and critical student of Crataegus and Rubus, and the discoverer of other interesting New England plants.

Intricatae.

Crataegus Peckii, Sarg., Rhodora, v. 63, (1903). A specimen gathered at Great Barrington, Massachusetts, by *Brainerd* and *Sargent* on October 4, 1902, was doubtfully referred by me in Rhodora to this species. The flowers subsequently gathered by Mr. Eggleston showed that the Great Barrington shrub is *C. Baxteri*, Sarg., a common species in the neighborhood of Albany, New York, and in western New York and eastern Pennsylvania. *C. Baxteri* was published in June 1903 in the *Proceedings of the Rochester Academy of Science* (iv. 107) but the Pennsylvania plant had been published by Ashe as *C. foetida* in *Ann. Carnegie Museum* (i. pt. iii. 389) in May 1902, and his name must supercede *C. Baxteri*.

Arnold Arboretum.

A NEW RANUNCULUS FROM NORTHEASTERN AMERICA.

B. L. Robinson.

About a year ago the writer in examining some of the *Ranunculi* of the *pedatifidus-pygmaeus* affinity noticed that a plant from Labrador and Gaspé Peninsula of Quebec, which has been passing as